AMERICAN ANNALS

OF

The Deaf,

EDITED BY

EDWARD ALLEN FAY,

UNDER THE DIRECTION OF

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AMERICAN ANNALS OF THE DEAF.

VOL. LIV, NO. 3.

MAY, 1909.

ARITHMETIC IN THE INTERMEDIATE AND ADVANCED DEPARTMENTS OF THE PENNSYLVANIA INSTITUTION.*

ARITHMETIC IN THE LOWER GRADES OF THE INTERMEDIATE DEPARTMENT.

THE few principles taken up in the lower grades of the Intermediate Department might easily be put into a nutshell; but for the children with their imperfectly developed reasoning faculties, they swell up into high mountains.

Carrying, when you have more in hand than you quite know what to do with (a difficulty that not many of us have to face), *borrowing*, when you don't quite know where to turn to meet the deficiency (a more familiar difficulty), multiplying our gains and losses, and dividing our little hoard with those around us; all these present very real difficulties to their young minds.

They come to the Intermediate Grades, as a rule, with a knowledge of the simplest forms of *addition* and *subtraction* and very simple problems in these two principles.

*The following five papers were read at meetings of the Teachers' Association of the Pennsylvania Institution during the present school year.—E. A. F.

Besides borrowing and carrying, they are expected in the first two years in this department to master all of the multiplication table, to gain some knowledge of short division, to be able to use intelligently the terms to buy, to sell, to pay for, to spend, to get so many cents worth of, a five or ten cent article, and to use the dollar sign and decimal point.

Before any new principles are taken up in the Intermediate Department, much work is done in making sure that the children are not just juggling with figures, blindly trying to remember that those two curly figures 3 and 5 are expected to be followed by an 8 if there is a + sign between them; but that when the quantity three or five is mentioned it calls up a mental picture of three or five objects. This is done with domino groups of dots, strokes on the blackboard, or sticks on a table; not using the written numerals until they have a quick recognition of what the group contains without stopping to count the units that compose it, and until they have gained some facility in combining those groups or in taking away a certain quantity of them. Then when you tell them that there were 9 apples on a table and a boy took 3 of them, the problem means something more to them than a 9 and a 3 that must be dealt with in some mysterious way.

Carrying.

The first new point taken up is carrying. The children do not seem to have much difficulty in learning to carry. If you show them that, when the column amounts to ten or twenty, they cannot very well put the 1 or 2 down under the second place, because the amount of the second column must be placed there; they soon see that it is quite convenient to place it a little below the line or at the top of the next column, adding it in with that. I think if

it is placed below, the children are less liable to turn their figures around, and if they have 23, for instance, put down the 2 and carry the 3, as it is more nearly in its natural position. On the other hand it is a little more likely to be forgotten underneath than at the top of the next column.

Borrowing.

In teaching them to borrow, we sometimes present this to them in concrete form by using single sticks for the units' place and bundles of tens for the tens' place; placing them on the floor, writing the numbers to be subtracted below them with crayon, and actually carrying out the process by transferring a bundle of ten to the unit column to fill the need there.

The greatest difficulty seems to be to make them see that you cannot take a larger number from a smaller number, and, obversely, that it is only laying up for yourself future trouble to go borrowing when you don't need to. It helps a little to hold three sticks in your hand and tell the child to take away five, or to draw three lines on the blackboard and tell him to brush off five. It dawns slowly on him that you cannot take away that many when you have so few. One of our teachers gives a long, thorough drill on this point first, with small numbers like

$$\begin{array}{rrr} 7 & 4 & 8 \\ -2 & -6 & -3 \\ \hline & & \end{array}$$

letting them place the amount remaining, or the word *cannot*, underneath. Or the same drill may be given orally by means of cards with two numbers on each, letting them tell you when it cannot be done.

There seems to be a difference of opinion about the advisibility of letting the children show the process of

borrowing in the work on the slates. I prefer to let them cross off the numbers and transfer the borrowed amount to the next column, for a while at least. It is all new and strange to them and it helps them to carry out the process more clearly. Then it gives the teacher an opportunity to see if the child has made a mistake simply in the subtraction, or in his method of working out the example.

Multiplication.

The next "lion in the path" is the principle of multiplication and rather a formidable beast it is.

The children are accustomed to think of numbers as so many units, and although they may be able to tell you that 3 cats have 12 feet, it isn't because they realize, as a rule, that four and four and four are twelve; but because they have carefully counted mentally, and sometimes with the aid of a finger, all the many feet of those cats.

The first thing to get firmly fixed in their minds is the fact that quantities or groups of units can be handled like things of other denominations, *e. g.*, 3 chairs, 4 buttons, 3 twos, 4 ones; that you can have a given number of twos, or that the quantity two can be taken a given number of times.

I have just been working on this with my new class and by placing 4 buttons, 7 crayons, 3 pens, etc., on a bench and then letting them tell me that there were 4 buttons, 7 crayons, etc., on the bench, and after that putting 4 twos cut out of paper, they readily saw that I had 4 twos and I think every child told me that I had 4 twos and not eight.

Then I placed 3 ones and finally 1 one and they easily told me that I had 3 ones and 1 one. If you have ever met the difficulty of making a child tell you that there was 1 one or 1 two on the blackboard you will appreciate

what that meant. Finally I put eight sticks down in four groups and they all still saw that I had 4 twos. Then we had a little drill letting them place 3 twos, 6 fours, 5 ones, etc. After a while I asked, "How many are 3 twos? One little boy answered at once, "Six," and I had very little difficulty in getting the whole class to tell me how many 3 twos, 2 fives, or 4 threes, were. Then we wrote 3 twos on the blackboard in several ways, *e. g.*, $||+||+||=6$, $2+2+2=6$, 3 twos $=6$, and $2\times 3=6$, and gave the result. Now they are ready for the drill in the table and our grade has the great pleasure of mastering it all in this year, or rather, trying to do it. I am sure you will wish us success for your own future peace of mind on that point.

I usually devote one arithmetic period in the week exclusively to this drill, letting the children study at their desks and come in turn to be catechised, and if they answer all the questions correctly, they are credited on the blackboard with having finished 2 times or 3 times. There is a good deal of rivalry and some get through the whole table twice while the slow ones are getting through once. Then we have different plans to vary the monotony of drill work: the clock face, or standing to be quizzed down by a rapid fire of questions. The clock face is simply a circle with the numbers one to twelve placed in irregular order around it, with the multiplier in the center. The child points in turn to each number, giving, as rapidly as he can, the product of the multiplier and that number.

Division.

Division is a simpler matter than multiplication, for the children have already learned to handle units in quantities.

Put four sticks on the table and ask how many twos are there. They will readily separate them into two groups of two each. They seem to enjoy this drill with the sticks

and do it quite readily mentally, without the aid of the sticks, in small numbers, but it is hard to make them utilize their painfully acquired synthetical work of the multiplication table in their analytical work in division. It is difficult to make them see that they are just reversing the process.

Considerable drill is given in finding how many twos or threes there are in a number before the regular form of $4 \div 2$ or $9 \div 3$ is given.

Problems.

Our problem work takes quite a stride forward in these lower grades, as the children begin now to apply these three essential rules to the simple problems of pocket-book, school-room life, and home life that confront them. It gives an opportunity to use much of the new language they are acquiring.

We try to give them in their problems, as far as possible, all the verbs that signify gain, *e. g.*, to receive, to get, to buy, to find, to raise, to earn, to make, to pick, etc.; and those that signify loss, *e. g.*, to give away, to sell, to spend, to lose, to break, to drop, to kill, to eat, to use. Then in connection with the work in the comparison of adjectives there is a wide and difficult field.

To find the difference between two numbers. A pointer is three feet long and a window pole is five feet long. How much longer is the window pole than the pointer? Or, the size of one object and the difference between that and another object being given, to find the size of the second object.

John is four feet tall and his father is two feet taller than he. How tall is his father?

Some of our teachers have gotten very good results and, I think, a clearer understanding on the part of the children of the actual meaning of those mystical signs

for plus and minus, by letting the children write their own little problems, or number stories as they call them.

I think we cannot emphasize too much the need of reading the *question* in the problem carefully and trying to think what it means. I often underscore the question to call their attention to it.

In arriving at the multiplication problems we seem to get a genuine taste of business life. At first I think it is well to keep the problems within their own experience as far as possible; imaginary shopping expeditions to dry-goods, stationery, or grocers' stores, so as to suggest a practical use for their new knowledge; but an occasional problem in the cost of several horses, automobiles, or houses gives them quite a startling awakening to the actual cost of things.

Then there are the problems that begin to suggest square measure, *e. g.:* There were four rows of girls in the gymnasium and five girls in each row. How many girls in all? There are ten rows of apple-trees in an orchard with six trees in each row. How many apple-trees are there in the orchard?

To play store and pretend to sell paper, crayons, pencils, and perhaps a little candy, is an easy and pleasant way to introduce the terms, so many cents worth of, and a five or ten cent article.

The value of the nickel, dime, quarter, and half-dollar are taught and used in simple problems.

Mental Arithmetic.

I try to give as much mental arithmetic as I can for the sake of encouraging quick work, but five or ten minutes of very quick work, or fifteen or twenty of more moderate work, is all that they can stand on a winter afternoon when their vitality runs a little low.

It gives good opportunity for using the various forms

by which addition and subtraction are suggested, *e. g.*, 2 and 4, 9 plus 6. What is the sum of 13 and 5? Add 6, 4, and 7. Or, 9 less 3. Take 5 from 11. Subtract 7 from 15. What is the difference between 6 and 14? 6 times 7? Multiply 7 by 4.

Then, too, quick work can be encouraged by showing just for a moment cards with two numbers written in large type to be added or subtracted. It means a good drill in attention. The child who has to move down in the class because he has failed to see the upturned card has a very crestfallen look when he realizes that his inattention has cost him his place.

Mixed combinations, such as $3 \times 6 + 4 - 2$, give good drill in quick work, for the children must learn to work quickly, as they cannot very well retain the combination in their mind.

A friend told me that, as a little girl, she always had trouble in adding long lists of figures until one day an older friend suggested that 5 and 9 always gave 4 in the answer; as $5 + 9 = 14$, 15 and $9 = 24$, etc. She said it was a perfect revelation to her. By drilling along this line you can help the children a good deal.

I find that the pupils enjoy the arithmetic period on the whole; the boys more than the girls, perhaps, possibly because they find more practical use for it in their games. For that reason I try not to confine it to that one hour of the afternoon, but slip in a little arithmetic on every occasion; finding the difference between the number of electoral votes received by Taft and Bryan, the number of years between two dates, considering the depth of the snow or the height of the thermometer from day to day. Anything that will make arithmetic stand for real things, anything that will take it out of the realm of theory into practice, is worth striving for.

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NUMBER WORK IN A SIXTH-YEAR CLASS.

A RECENT writer has said that the real use of number is measuring, for counting is nothing but measuring to see how many ones are present. This is no new idea. It is natural to count and to estimate. We estimate oftener than we count.

The tiny child involuntarily holds out his hand for the larger ball, when two are presented for his choice, but he also, as he lies in his cradle apparently admiring his little hand, realizes that he has five pudgy fingers but only one chubby fist, though it will be some time before he can formulate the thought.

Number work may begin in the first, second, or third year in school, but the estimating and counting have been going on in the childish mind since reflection began there. Even dumb animals have this faculty slightly developed. I knew a gentle old family horse who always turned his head to see how many persons were getting into the carriage and then started off suiting his pace to his load.

Number work in a Sixth-Year Class does not mean that the pupils are in their sixth year of number work, but that they have been between five and six years in school and by the end of June will be prepared to enter the Advanced Department.

Our aim is to have them thoroughly understand the four fundamental operations, addition, subtraction, multiplication, and division; to have some knowledge of the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, or a quarter, $\frac{1}{8}$, etc., using only one for the numerator, except with the concrete terms, three quarters of a dollar, three quarters of an hour, three quarters of a yard, and three quarters of a pound; to

write the Roman numerals to one hundred, and write and read the Arabic to hundreds of thousands, or millions; to do easy simple and complex oral problems and more difficult written ones; and when, after an abstract combination, the word problem appears, to be able to write an original one showing an understanding of all the signs used, as: $180+60-90=$; $\frac{1}{2}$ of $18+6=$; $7\times3+9=$; $10{,}000-986=$.

Original problems by pupils who were born deaf:

180 + 60 − 90 = Problem.	180
There were 180 sparrows on a tree and 60	60
on the ground. Somebody shot 90 of them.	240
There were 150 birds left.	90
	150

$\frac{1}{2}$ of 18 + 6 = Problem.	$\frac{1}{2}$ of 18 = 9
I had 18 blocks. I gave my teacher $\frac{1}{2}$ of	18 6
them and 6 blocks to Albert. I gave away	−15 15
15 blocks. I had 3 blocks left.	3

7 × 3 + 9 = Problem.	7
My friend had .07. His brother had three	3
times as many. He had .21. Somebody	21
gave him .09. He had .30 then.	9
	30

10,000 − 986 = Problem.	10,000
10,000 men went to fight the Indians. 986	986
men were killed. There were 9,014 men left.	9,014

We require the pupils also to know the measure of time; the names and values of all the smaller bills and coins in the United States Currency, preferably in the latter to use nickel and dime, instead of five and ten cent piece, as being shorter and simpler; to make change from $1.00 easily, with the aid of the toy paper money at first and later with-

out any mechanical assistance; we also lay great stress upon the importance of the decimal point, which children are so apt to overlook.

They are taught liquid measure, and measure a gallon, quart, pint, or gill of water quickly and readily with the tin measures furnished us for this purpose, and with them ascertain for themselves how many quarts make a gallon, pints make a quart or gallon, and so one. They learn long measure to yards only, where it can be applied in the class-room exercises, in measuring the length of a card, the width of the table, the height of a child, the yards, feet, and inches across the room, etc.

For busy work we have White's "Two Years with Numbers," which is, like the average human being, far from perfect but with many good points. It follows the Grube System of giving all the changes possible in the combinations and partitions of numbers from 10 to 20, and from 20 to 40, working with the fundamental rules with one figure in the multiplier or divisor and finding the fractional parts, with one for the numerator, that will give only integral results.

The book was prepared for small normal children and the language is simple, but there are many rocks on which our poor little barks founder. A few of the most puzzling propositions can be entirely eliminated and the rest explained in a way that makes it possible for any of our pupils to do them. There are valuable suggestions in these problems for the hectograph books, substituting tens and hundreds for the units employed in the busy work in school.

For the language belonging especially to arithmetic the children are taught plus, less, multiplied by, divided by, bought, sold, paid for, spent, the cost of, and the price of.

In all number work, written or oral, accuracy and rapidity are of the greatest importance, accuracy of course coming

first, though "slow and sure" does not apply in arithmetic; the child who is the slowest is frequently the least accurate. The tables must be committed to memory and, after the children have thoroughly memorized them, it is not a difficult matter to apply them quickly and correctly in abstract work or problems.

Addition in groups of numbers that combine easily, as 6 + 4, 7 + 3, 4 + 3 + 7, written on the wall s'ate and quickly erased, makes a good beginning for a drill in rapidity, then 6 + 4 + 5, 7 + 3 + 8, 14 + 3 + 7, adding day by day to the combinations. We also give similar exercises, as lip-reading, very rapidly. To these exercises we add such combinations as six threes, plus two, plus five, multiplied by four; or three fours, plus four, plus four, plus five, divided by five.

Multiplication is only addition taking the same number several times. The pupils are shown this, but are never allowed to use it to find the product of two numbers. When they are reciting the multiplication tables, we prefer that they should say three sixes or five eights to three times six or five times eight, thus keeping constantly impressed upon their minds that three groups of six each have been asked for, or five groups of eight. We show them also that though three sixes and six threes bring the same result, in the first instance three groups of six each have been used and in the second six groups of three each. It is very easy to illustrate this with sticks tied together in bundles of sixes and threes.

The multiplier is always regarded as an abstract number. Thus $12 multiplied by 6 means six times twelve dollars. The product is always the same kind of a number as the multiplicand. 12 pounds multiplied by three equals 36 pounds.

Multiplication and division are taught together and the process much shortened. If the pupils have a clear mental

picture, or even their bundles of sticks before them, it is not difficult for them to ascertain for themselves that if three bundles of six sticks each make eighteen, eighteen sticks divided into three groups will have six sticks in each group, and if there are twenty sticks, there will still be the three equal groups of sixes, but two sticks will be left over. After they have been shown all that is necessary with the sticks, the tables must be committed to memory and constantly drilled upon.

In an article I read not long ago it said that drill on numbers for numbers' sake had been forbidden in first and second grade work in the Chicago (hearing) schools, and it added that what the Grube System and the multiplication tables had done for the children in stultifying their open minds and making them mechanical it had also done for their teachers. This I do not consider applies to us; there is too much variety in teaching the deaf for it ever to become mechanical and with our pupils it is very desirable that part of their work should be mechanical. As soon as they have so thoroughly mastered their tables that they use them without thought, in a spontaneous manner, a much wished-for result has been accomplished. And there is surely no stultifying of the mind in a quick drill where the desire to get to the head of the class is as keen as the hope of winning in any game of skill.

Subtraction must always be a slow and toilsome matter to teach, especially the borrowing process, where no explanation can be given that our young pupils can readily understand. As long as we confine ourselves to numbers that can be handled with blocks or sticks, the matter is quite easy, but as soon as we arrive at such problems as "The City of New York owed $2,000,000 and Boston $1,698,232; how much more did New York owe than Boston?" we find ourselves in deep water. It is very difficult for the deaf child to comprehend that he must go

all the way to his two to make ten of his first naught and that all the intervening ciphers have become nines, though he had little trouble in seeing that ten less one left nine, or even a hundred less one ninety-nine. No way suggests itself for teaching the subtraction of large figures but constant drill and endless patience.

In the beginning of work with fractions, from time immemorial, the apple has always been the unit to divide into halves and quarters, and when it has been successfully divided and eaten we can turn to something else not quite so alluring. A sheet of paper or a crayon is just as practical for schoolroom purposes, if not so interesting to the young pupil. In finding the parts of small numbers our blocks, sticks, or toy dollars are used and the children write a problem about it afterwards. Thus, we wish to find $\frac{1}{4}$ of 24. Twenty-four blocks are put upon the table and one of the children arranges them in four equal piles, afterwards handing one of the piles to a classmate who writes, "John had 24 blocks. He gave $\frac{1}{4}$ of them to me. He gave me 6 blocks. He had 18 blocks left."

We require all the children's papers to be neatly written. In problems a broad space is left at the right-hand side of the paper where the abstract work is done, the language portion occupying the larger spaces in the centre and left. In these examples the language, punctuation, and solution of the problems must all be correct or it is not marked perfect.

Inaccuracy in the fundamental operations causes much trouble to both teacher and pupils; this difficulty can often be traced to insufficient drill; so, in this grade, if we do not attempt to cover a great deal of ground we aim to have what we do cover very thoroughly done.

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ARITHMETIC IN THE C GRADE OF THE ADVANCED DEPARTMENT.

CHILDREN when they reach the C Grade of the Advanced Department have had drill in addition, subtraction, multiplication, and short division. They have had the multiplication table to 12, and simple problems both oral and written. The table of United States money has been given them and they know something of pints, quarts, and pounds. In notation they can write numbers of two periods, some three. With this start they begin to take up problems that require more reasoning and to tell how and why they do them. One of the first things necessary is that a child understand what a problem means, and to do this the problem must be read correctly. Stress is laid on this, for many failures result from not understanding what is wanted. It is evident that the more language a child has, the better his understanding is, or should be, of the problems. Problems that remain unsolved in study hour are sometimes readily done after several readings in the class-room. The child must compare relations; he must perceive them; in other words, he must reason. We try to teach principles, and that these principles are applied to facts in the problem, not that the facts are twisted to suit a principle.

A pupil often has trouble with a problem because of the large numbers involved. He can be helped and learn to help himself by the substitution of smaller numbers. With the change he readily sees how the problem with the larger figures is done, and what is more important, the process is made clear to him. On the other hand the substitution of large figures for very small ones sometimes shows

a principle that a pupil does not get in any other way. In the example $3 + 4 + ? = 12$. The pupil adds the 3 and 4 readily enough and puts down the 5 without knowing just how he obtained it. Now if we take a problem with much larger figures, as

$$12{,}460 + 25{,}006 + ? = 50{,}370,$$

he is all at sea. If he is then shown that

$$\begin{array}{rcr} 12{,}460 & \text{and} & 50{,}370 \\ +25{,}006 & & -37{,}466 \\ \hline 37{,}466 & & 12{,}904 \end{array}$$

and that 12,904 is the required number by

$$\begin{array}{r} 12{,}460 \\ 25{,}006 \\ +12{,}904 \\ \hline 50{,}370 \end{array}$$

he applies the principle to his first example and subtracts the sum of 4 and 3 to find the required 5.

It is of the first importance to train a child to think for himself. Never show him how to do the particular problem that is giving him trouble. Try by questioning to be certain that he understands the problem. Then lead up to the solution by further questions. Make him see and tell why he does things. Oral work by the class, while slow, is a great help to the clear understanding of the various processes. If a child can read a problem, analyze it, tell what he is going to do, and do it, you may be certain that he understands his work.

In this grade we find it is better to have the pupils use the signs and to write the reasons for the various processes performed. It also adds to the clearer thinking if the

language associated with the different figures in the problem is written out with the figures. Thus in the problem, What will 5 apples cost at 2 cents each?

Solution. 1 apple costs 2 cents. 5 apples will cost 2 cents × 5.

2 cents for 1 apple.
×5
—
10 cents for 5 apples.

5 apples will cost 10 cents. Ans.

Later, when all the processes are clear to a pupil much may be discarded and results accepted.

The various tables of dry measure, liquid measure, avoirdupois weight, long measure, time, and U. S. money are taken up and constructed as far as possible in the schoolroom. A box of sand, with quart, peck, and bushel measures, makes this easy for dry measure, while gill, pint, quart, and gallon measures do the same for liquid measure. A set of scales with pounds and ounces gives us a start on avoirdupois weight and enables us to make clear the difference between ¼-lb and 4 lbs. Long measure is taken up in the same manner, inches to feet, feet to yards, yards to rods, etc. Square measure is not taught in this grade, but as the word "acres" occurs in many of the problems, the class is taken out on the grounds and an approximate acre is paced off for them, 70 paces on a side and a boy standing at each corner. The number of acres in the grounds is discussed. In this way tables are made to mean something besides a mere repetition of words. They are something concrete and useful. After the tables are constructed and learned they make excellent material for quick oral work.

The various words and phrases used in arithmetic are

given, explained, and drilled on: Bought for, sold for, paid, cost, received, make, profit, gain, loss, save, spend, earn, owe, each, price of purchase, at the rate of, what part of, more than, less than, count from—to; count back, how much, how many.

In a problem such as "A man bought a horse for $25 and sold it for $140. What did he gain?" it is better for a clear understanding of what was done with the money if we use the words paid and received in the solution, rather than bought for, sold for. It makes a pupil think what was done with the money and keeps a clearer idea of the transaction in his mind. In teaching gain and loss, the class buy and sell things and put the amount on the slate. First a book is bought and sold for more than its cost. Gain is to be more than cost. Insist on the full definition, as it means much later. Then follow problems in which the amount received and gained is given to find the cost, the amount received and amount lost to find the cost, the amount lost with the cost to find how much was received. All of this work is best understoood at first if kept to small amounts. Larger figures can come later when the principles involved are thoroughly understood.

Simple fractions are taken up at first through Federal Money. The coins are shown the class and questions asked. A nickel is what part of 10 cents? A nickel is what part of a quarter? A dime is what part of a dollar? or, What part of a dime is a nickel? What part of $5 is a half-dollar? These questions are discussed and the class is shown on the slate that in such questions as, A nickel is what part of a quarter? a nickel is 5 cents, a quarter 25 cents, and if we put the 5 over the 25 with a line between both can be divided by 5, thus: $5 \mid \frac{5}{25} = \frac{1}{5}$, and that 25 cents is $\frac{1}{4}$ of $1 in the same way. A circle is drawn and divided into quarters to illustrate the problem in another way.

After some drill the question is reversed. A nickel is $\frac{1}{5}$ of how much money? If the money is put on the table and the pupils are allowed to work it out for themselves, it makes much more impression and the language of the question means something to them; they have a reason for doing things. As the various tables are taken up they are treated in the same manner. What part of a yard is one foot? What part of a gallon is one pint? 8 oz. is what part of 2 pounds? Fractions are carried no further than this in this grade.

When a class can add, subtract, multiply, and do short division to 12 accurately it is ready for long division. There are several ways of taking this up. Some of the difficulties may be lessened if we proceed as follows. The dividend is put down, the divisor placed at the left as usual, with the line separating them. A line is then drawn over the dividend and each figure of the quotient placed over the corresponding figure used in the dividend; thus—

```
   11,250
 ----------
15)168,756
   15xxxx
   ---
    18
    15
    --
     37
     30
     --
      75
      75
      --
       6
```

This method has its advantages in keeping the proper number of figures in the quotient. A cipher there always bothers pupils at first, but as they readily see that each figure in the dividend must have its corresponding figure

in the quotient after the first group, the cipher is put in its proper place. They are taught to find their own mistakes as far as possible and to prove the accuracy of their work.

As the tables are learned pupils are taught to reduce unlike terms to the same demominations before adding or subtracting. In the problems, A man sold 3 pints of milk from a gallon. How much milk had he left?

1 gal. = 8 pts.
− 3 pts.
5 pts.

He had 5 pints left. Ans.

One piece of cloth is 3 yds. 1 ft. 9 in. long. Another 2 yds. 2 ft. 6 in. long. What is their length when sewed together?

36 in. in 1 yd.
×3
108 in. in 3 yds.
12 in. in 1 ft.
+ 9 in.
129 in. in 1 piece.

36 in. in 1 yd.
×2
72 in. in 2 yds.
24 in. in 2ft.
+ 6 in.
102 in. in the other piece.

12 in. in 1 ft.
×2
24 in. in 2 ft.

129 inches
+102 inches
231 inches

The cloth is 231 inches when sewed together. Ans.

Problems of this kind are given until the tables are drilled on, and then the addition and subtraction of compound numbers are taken up and our former problems are worked out in another way.

1 gal. 0 qt. 0 pt.	= 0 gal. 4 qt. 0 pt.	
−0 gal. 0 qt. 3 pt.		
	0 gal. 3 qt. 2 pt.	
3 pt.	−0 gal. 1 qt. 1 pt.	
1 qt. 1 pt.	2 qt. 1 pt.	Ans.

3 yds. 1 ft. 9 in.
+2 yds. 2 ft. 6 in.

5 yds. 3ft. 15 in.

5 yds. 4 ft. 3 in.

6 yds. 1 ft. 3 in. Ans.

It is best in these problems to make haste slowly, to have each operation set down, and to let the short cuts come later. When each step in the problem is known and understood many of the operations may be eliminated, but let the slower pupils of the class set the pace here.

A period in school is devoted first to putting on the slate the work done in the study hour of the evening previous. This is done from the books, not from the papers. These problems are rapidly corrected, particular attention being paid to the language used. Explanations are given wherever needed. Each pupil then corrects his written work and studies those problems in which he has made mistakes. New work is then taken up, or review work given in the principles taken up in the last few days. The last of the period is generally taken for oral work. A general written

review is given every Friday, covering all the general work to date.

In the C Grade, then, the pupils review the work they have had in addition, subtraction, multiplication, short division, and Roman numerals. They take up problems, learn to reason about them, and to tell how and why they do them. They take up long division, simple fractions, tables of time, weight, liquid measure, dry measure, long measure, U. S. money, and the addition and subtraction of compound numbers. Stress is laid on the language used; accuracy is encouraged rather than speed; and, most of all, the ability to think is sought, which is the foundation of all arithmetic.

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A METHOD OF TEACHING THE VALUE AND ADDITION OF FRACTIONS.

THE pupils of the B Grade in the Advanced Department of the Pennsylvania Institution continue the study of compound numbers, the analysis of general problems, and, in addition, common and also decimal fractions, if the classes remain in the grade longer than one year before promotion into the A Grade to fill the vacancies made by the graduates and those leaving school for one cause or another.

Of course, in so short a time, only an outline of these subjects can be given, two or three years being necessary for the study of fractions alone.

As our space is limited, we propose, in this paper, to explain our method of teaching the value and addition of fractions.

The first thing to be done is to make the pupils understand that a fraction is a part of a thing, as half an orange, a third of an apple, etc. As apples and oranges are not always at hand, we illustrate fractions by parts of a dollar, the value of which our pupils know and are able to use readily in their little business transactions. They all know that 100 cents, 20 half-dimes, 10 dimes, 4 quarters, or 2 halves make one dollar. So we take a cent and ask, "What part of a dollar?" making the pupils write $\frac{1}{100}$ of a dollar and speak it.

We followed this with the half-dime, which they write $\frac{5}{100}$ or $\frac{1}{20}$ of a dollar; then the dime, which they write $\frac{10}{100}$ or $\frac{1}{10}$ of a dollar; the quarter, being $\frac{25}{100}$ or $\frac{1}{4}$ of a dollar; and the half, $\frac{50}{100}$ or $\frac{1}{2}$ of a dollar; teaching the pupils at the same time how the reduction to lowest terms is performed; so that they will see that $\frac{25}{100}$ and $\frac{1}{4}$ of a dollar are the same in value.

We tell them at the same time, too, that the number above the line is called the numerator and the one below the line the denominator.

Pupils often think that $\frac{1}{4}$ is more than $\frac{1}{2}$, thinking that the value of a fraction depends upon the size of the denominator. If they make this mistake show them the coins which these fractions stand for and they will see that the greater the denominator (the numerator remaining the same) the less the value of the fraction.

A good practice in this connection is to ask the value in cents of $\$\frac{1}{5}$ plus $\$\frac{1}{10}$, etc. Thus $\$\frac{1}{5} + \$\frac{1}{10} = ?$ cents. These exercises the teacher can vary indefinitely.

To teach reduction of fractions, we take 45 cents and ask, "What part of a dollar?" and have it written $\$\frac{45}{100}$. We then ask the pupils to make the terms of the fraction smaller by dividing the numerator and the denominator by the same number, getting as a result $\frac{9}{20}$ of a dollar. And so on, with other reducible parts of a dollar, until

they comprehend the principle of reduction, which they learn in this way for themselves without an explanation—the best way in the world to learn a thing.

We have now taught the writing, reading, reduction, and how to estimate the value of fractions.

We apply these methods to weights, measures, and distances, and by so doing keep up the interest and promote the intellectual advancement of the pupils.

When we find them fairly proficient in this work, they are ready to take up the addition of fractions. We ask, "What part of a dollar is the sum of $\$\frac{1}{4}$, $\$\frac{1}{2}$ and $\$\frac{1}{10}$?" and tell them they cannot add together fractions with different denominators without changing them to fractions having a common denominator, any more than they can add sheep and horses. We then tell them how to arrange the fractions; thus—

$$\$\frac{1}{4} = \$\frac{25}{100}$$
$$\$\frac{1}{2} = \$\frac{50}{100}$$
$$\$\frac{1}{10} = \$\frac{10}{100}$$

Total, $\$\frac{85}{100}$ or $\$\frac{17}{20}$

We ask how many hundredths $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{1}{10}$ of a dollar are equal to, setting the answers opposite their equivalents; and adding the numerators, we place the sum over the common denominator, telling them they must never add the denominators.

We find the sum to be $\$\frac{85}{100}$ or $\$\frac{17}{20}$, equal to 85 cents, in proof of which we add the coins the fractions represent.

Having taught in this way that fractions must be reduced to common denominators before they can be added, the next step is to teach the way of performing the operation.

As an example let us proceed to find the sum of $\$\frac{1}{2}$ $\$\frac{1}{4}$, $\$\frac{1}{20}$ and $\$\frac{1}{25}$.

We still take parts of a dollar to show that multiplying the numerator and denominator of a fraction by the same number does not affect its value.

Set down the fractions to be added; thus—

$$\$\tfrac{1}{2} \times \tfrac{50}{50} = \tfrac{50}{100},$$
$$\$\tfrac{1}{4} \times \tfrac{25}{25} = \tfrac{25}{100},$$
$$\$\tfrac{1}{20} \times \tfrac{5}{5} = \tfrac{5}{100},$$
$$\$\tfrac{1}{25} \times \tfrac{4}{4} = \tfrac{4}{100},$$

$$\$\tfrac{84}{100} = 84 \text{ cents.}$$

Then the denominators; thus—

$$\left.\begin{matrix}2\\4\\20\\25\end{matrix}\right) 100 \left(\begin{matrix}50\\25\\5\\4\end{matrix}\right.$$

We ask what is the least number they will divide without a remainder. This we find to be 100, and setting it down after them in the above diagram we proceed to divide it by each denominator, setting the quotients to the right opposite the divisor, and tell the pupils the terms of the first fraction are to be multiplied by 50, of the second by 25, of the third by 5, and of the fourth by 4, to reduce them to fractions having a common denominator.

Performing the operation indicated in the first diagram and adding the numerators, we get $\$\frac{84}{100}$ or 84 cents. Call the attention of the pupils to the fact that in the operation the value of the fractions has not been changed, as they can easily see from what they have previously learned, and fix it upon their minds.

We now proceed to apply what has been learned to the addition of fractions in general, and ask for the sum of $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$, and $\frac{11}{12}$.

Arranging the fractions in a diagram as before; thus—

$$\frac{3}{4} \times \frac{6}{6} = \frac{18}{24},$$
$$\frac{5}{6} \times \frac{4}{4} = \frac{20}{24},$$
$$\frac{7}{8} \times \frac{3}{3} = \frac{21}{24},$$
$$\frac{11}{12} \times \frac{2}{2} = \frac{22}{24},$$

we place the denominators in order in a column; thus—

$$\left.\begin{matrix} 4 \\ 6 \\ 8 \\ 12 \end{matrix}\right\} \quad 24 \quad \left\{\begin{matrix} 6 \\ 4 \\ 3 \\ 2 \end{matrix}\right.$$

and ask what is the least number they will exactly divide without a remainder, and keep on asking till the right number, 24, is obtained, which we proceed to divide by each denominator, setting the quotient opposite it. Multiplying the terms of each fraction from which the quotient was obtained and setting the products in their proper places, the reduction to a common denominator is complete. Adding, the sum is found to be $\frac{81}{24}$. Dividing the numerator by the denominator and reducing to lowest terms, we obtain $3\frac{3}{8}$ as the sum of the fractions.

This method of finding the common denominator by inspection we constantly pursue, only using the process of finding the least common multiple for fractions when the denominator sought is too large to be obtained by inspection.

The diagrams used in illustrating the process of addition we have found of great assistance to our pupils and

for some time we always place them on the blackboard with the proper signs to be filled out.

After a time bright pupils will shorten the process, as is usually done by good arithmeticians, without any suggestions from their teachers. But others will persist in using lengthy processes, which were only intended as primary aids in the comprehension of the work to be performed.

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METHODS IN ARITHMETIC IN THE A GRADE OF THE ADVANCED DEPARTMENT.

PUPILS coming from the B Grade to the A Grade are expected to know the fundamental operations so as to be able to work with facility. They are expected to have a knowledge of denominate numbers such as is embraced in tables of United States money, time, avoirdupois weight linear measure and measure of capacity. They have learned considerable about fractions and should know the meaning of such terms as cost, gain, loss, selling price, earn, spend, and save. A big step forward has been made by pupils who fully understand the first four of these terms. Pupils should also know how to reason to and from the unit and be familiar with notation of numbers up to a million.

In the first year's work in the A Grade, we continue work in fractions, notation, profit and loss, and fractional analysis, and teach in addition square measure, cubic measure, decimals, percentage, and easy interest, and employ x in the solution of problems toward the close of the year, if the class is bright.

Notation.

To facilitate the reading of large numbers we lay down this general scheme:

billions	millions	thousands	units
xxx,	xxx,	xxx,	xxx
96,	005,	700,	065

We say nothing of tens, hundreds, ten-thousands, hundred-thousands, ten-millions, hundred-millions, etc.

We use four units of different sizes as shown above and, if the pupil is familiar with numbers up to a thousand, he can read any number that may be written under the general scheme. We show that the large number written under the scheme is made up of four numbers, as follows:

96,000,000,000 = 96 billion.
5,000,000 = 5 million.
700,000 = 700 thousand.
65 = 65 units.

96,005,700,065

The pupil reads the number of units in each period with the name of the period. He knows that a billion is the largest of these four measures, the million next, etc. He has no exact concept of a billion, neither has he of a hundred. He comes to the conclusion that there are ten cows in a field by counting them. He reasons just as fearlessly and accurately with billions as with hundreds. In writing numbers in words, he is asked to observe the use of the comma just as it comes in the Arabic Notation after the names of the periods. Thus, the large number written in Arabic is written ninety-six billion, five million,

seven hundred thousand, sixty-five; *and* may be used instead of the last comma. It will not do to use *and* anywhere else than at the decimal point in numbers involving decimals. .325 = Three hundred twenty-five thousandths. 300.025 = Three hundred and twenty-five thousandths, a material difference. By using *and* between the whole number and the decimal only there is never any confusion.

In order to give the pupils an idea of a million we proceed as follows: There are 7,000 grains (of wheat) in a pound avoirdupois; in 60 pounds, or a bushel, there are 420,000 grains; or 840,000 grains in a two-bushel bag tied shut, or about 1,000,000 grains if the bag is even full. Indicate the size to those who have never seen a bag of wheat. A thousand such bags of wheat make a billion.

We do not spend much time on Roman Notation, as pupils master it readily by observing that a letter never repeats four times. 1900 is written MCM, not MDCCCC, as you may have seen.

Profit and Loss.

We have already spoken of the four terms involved in profit and loss—cost, gain, selling price, and loss. These terms must be thoroughly understood if satisfactory progress is to be made. There is no use in teaching formal definitions. A person gains when the selling price is more than the cost and loses when it is less.

We supplement what has already been taught in the B grade by exercises as follows, in which the pupil is asked to write the proper number in the proper place:

	Cost.	Gain.	S. P.	Loss.
Problem I.....	20	16	.....	.....
Problem II.....	.....	14	20	.....
Problem III.....	.....	.....	35	14
Problem IV.....	30	.....	.....	20
Problem V.....	.....	24	.....	18
Problem VI.....	14	.....	.....	25
Problem VII.....	.....	30	25	.....

The first problem is done and explained before the second is written down. The fifth, sixth and seventh cannot be done; they have been submitted to impress upon the minds of the pupils that one cannot gain and lose at the same time, that the loss cannot exceed the cost, and that the gain cannot exceed the selling price.

Exercises in this form are also submitted, two statements being given and the pupil being required to furnish the third.

Pupils' Exhibit.

(1) The cost = 25,
the gain = 10,
— — = —

(2) S. P. = 40,
loss = 20,
— = —

(3) S. P. = 65,
gain = 35,
— = —

(4) Loss = 16,
cost = 24,
— = —

(5) S. P. = 90,
Cost = 80,
— = —

(6) Cost = 60,
S. P. = 80,
— = —

(7) Loss = 20,
Gain = 5,
— = —

(8) Gain = 40,
Cost = 20,
— = —

When the pupils can do *all* of these problems they will know the full meaning of all the terms involved. These

are distinctly thought-exercises. There is no learning to do by doing in the above exercise. If you do not understand you fail.

The next point to make clear is that gains and losses are always reckoned on the *cost*. If a man buys a horse for $120 and sells him for $100, he had $120 invested and lost $\frac{1}{6}$ of his money. RECKON ON THE COST is written on the blackboard with letters two feet in length. Pupils make errors along this line after having their errors corrected many times, and fail to see why the equanimity of the teacher should be disturbed by their carelessness. I believe in making pupils believe that some mistakes are unpardonable after their errors have been corrected more than a reasonable number of times. If you do not make a fuss about the matter they look with indifference on their errors. My pupils know that the *cost* is the base of reckoning.

What does *reckon* mean? Pupils ask me for a definition. I never give any. If I did, nobody would remember it a year hence. (*You* give a definition that will explain the word in simple language such as will make the matter plain to deaf boys and girls. I am waiting for a definition. If you cannot express yourselves in speech make signs.) I do a problem and reckon on the cost; then I reckon on the selling price, and tell the pupils that the latter method is wrong and cross it out. One of the greatest absurdities in the public schools to-day is to make pupils give formal definitions of words, instead of asking pupils to use the words correctly in sentences; another absurdity consists in making pupils do problems in a stereotyped way, crushing out originality. Ideas are more important than words and originality should be more at a premium than cut-and-dried methods submitted by others.

Fractional Analysis.

Many deaf children who come to me do not take kindly to the reasoning process. They want to be shown how to

do a thing and then they will remember and do it the same way. The work they have been doing in arithmetic has been of necessity of the memory type. The first six years in arithmetic are spent very largely in learning processes which will be employed in later reasoning. They juggle with figures to come by results which they think reasonable without comprehending the reason for the processes involved. Such pupils must be made to fail and be forced to master the real significance of the reasoning process.

A short time ago I submitted this problem to catch the unthinking: "If $\frac{5}{8}$ of the length of a pole is 16 feet, what is $\frac{7}{8}$ of its length?" Two pupils stated that $\frac{1}{8}$ of the length is 2 feet and $\frac{7}{8}$ of the length is 14 feet. The decoy worked successfully; 16 is divisible by 8 and not by 5; so they decided to divide by 8. If the number 15 had been used instead of 16, they would have done the problem correctly by following the path of least resistance, just as they failed in this case by doing that very thing. I explained to the class why I chose the number 16. One of the boys who failed said, "How did you know how I would think? Did you look into my head?" We had a good laugh at the expense of the two pupils who failed, and we reminded them that it was necessary to think to come by correct conclusions. We then did the problem in this way:

5 eighths of the length = 16 feet,
1 eighth of the length = $3\frac{1}{5}$ feet,
7 eighths of the length = $22\frac{2}{5}$ feet.

We also illustrated by a drawing showing the pole divided into eighths, and $\frac{5}{8}$ and $\frac{7}{8}$ of its length indicated.

Teacher and writers of text-books on arithmetic have in mind reasonable results when submitting problems for solution and make problems read so as to bring about such results. Pupils work to get the results and often succeed without understanding.

Now, the pupil who learns only by imitation and has not

yet caught the real meaning of the above explanation says to himself, "I must first divide by the numerator and then multiply by the denominator." For his benefit, we submit the following problem: If 6 melons are worth 36c., how much is $\frac{3}{4}$ of a melon worth? He may proceed, as follows:

6 melons cost 36c.
1 melon costs 6c.
$\frac{3}{4}$ melon costs 8c.

We shall hold him up to ridicule, because he must be taught to think even if the process gives mental pain. We draw a melon and write 6 cents under it and then we draw $\frac{3}{4}$ of a melon and ask which costs more money, one melon or three-fourths of a melon.

We must cling to concrete explanations. We must *draw, draw, draw,* to illustrate.

While preparing in mathematics, I had the honor of being taught by two of the foremost mathematicians of the world. The one is now Professor of Mathematics at Yale University and the other is Professor of Mathematics at Johns Hopkins University, the former a graduate of Oxford and the latter of Cambridge. I call attention to these two able men because in their demonstrations they constantly resorted to drawing to reinforce the appeal made to the understanding through mathematical terms, and that method of treatment is potent in teaching the deaf. I do a great deal of drawing, but the mind attitude of many of the pupils who come to me is to learn by way of the memory. I am constantly appealing to the understanding. Arithmetic is not a memory study after the fundamental operations have been mastered.

Measurements.

Practical measurements furnish one of the best weapons to break down the mental attitude of the deaf to learn all

things by imitation, repetition, and memorizing. Here a powerful appeal can be made to the understanding.

In teaching square measure we make use of a blackboard which is 16 feet long by $3\frac{1}{2}$ feet wide. Upon it we map out the number of square feet in its surface. There will be as many square feet in one row as the board is feet long and as many rows as the board is feet wide. We set down the solution in this way:

16 sq. ft. in one row.
$3\frac{1}{2}$ rows.
48
8
56 sq. ft. in the surface.

In the same way, we map out the number of square inches in a square foot and the number of square feet in a square yard. With the rod pole, we lay out a square rod in the schoolroom and calculate the number of square yards in its area. We measure an acre with the rod pole on the lawn, making it 16 rods long by 10 rods wide, but also show that an acre may have many other shapes. Pupils see that multiplying the length by the width gives the area, provided the units in the length and the width are of the same denomination, but one should insist on the pupils setting down the problem in the way indicated above, so that they will be reminded constantly of the real meaning of the operation they are performing.

After pupils know how to reckon square measure, we ask some questions like these: "How thick is a square foot?" "What is square measure?" "What is a square foot?" "A square yard?" "A square rod?" Definitions are made after pupils have some knowledge of a subject rather than to give them a knowledge of the subject by mastering definitions.

In teaching cubic measure, we use a cubic-foot box and

cubic inches. The problem may be to find the number of cubic feet in the schoolroom. The room is 20 feet square and 11 feet high. We put the cubic-foot box in a corner of the room and move it a foot at a time along one side. After moving it three or four spaces, some pupils will volunteer the information that there are 20 cubic feet in one row; then we bring the box forward a foot, indicating with the hand where another row would be and the next row and so on, and the pupils see 20 rows in their imagination We now set down the problem in this way:

20 cubic feet in one row.
20 rows.

400 cubic feet in one *layer*.

Now raise the cubic-foot box one foot, indicating another layer with the hand, raise it another foot, and another, and the pupils see eleven layers, knowing already that the room is eleven feet high. We now finish the problem.

400 cubic feet in one layer.
11 layers.

4400 cubic feet in the room.

The same method may be employed when the units of measure are cubic inches or cubic yards. Making first impression vivid is sufficient reason for following the above method. Pupils should be made to set down the problem as above for some time. Later on the pupils may say $20 \times 20 \times 11 = 4400$ = the number of cubic feet in the room. Concrete methods must be used for sufficient time to allow the pupils fully to understand before abridged methods are introduced. Practical measurements furnish an excellent field for mental training.

Circular measure may be set forth in as concrete a way as square measure. The circumference of a circle is 3.1416

times the diameter. We show this by passing a string around a cylinder to find the circumference. Then apply this length to the diameter three times and about one-seventh of a diameter is left: $3\frac{1}{7} = 3.1428$. We tell the pupils that a very accurate measurement makes the circumference 3.1416 times the diameter. The area of a circle may also be mapped out.

X.

We use x in the solution of various problems, and ten year's experience in its use leads me to prefer the x method to the old-time methods by which I was taught.

Examples: (1) What % of 800 is 675?

$$\frac{x}{100} \times 800 = 675$$
$$8x = 675$$
$$x = 84\frac{3}{8}$$

Result: $84\frac{3}{8}\%$ = the rate.

(2) 800 is 75% of what number?

$$800 = \frac{3}{4}x$$
$$3200 = 3x$$
$$1066\frac{2}{3} = x$$

Result: 800 is 75% of $1066\frac{2}{3}$.

(3) What % of $\frac{4}{5}$ is $\frac{3}{4}$?

$$\frac{x}{100} \times \frac{4}{5} = \frac{3}{4}$$
$$\frac{x}{125} = \frac{3}{4}$$
$$x = \frac{375}{4} = 93\frac{3}{4}\%.$$

Result: $93\frac{3}{4}\%$ = the rate.

(4) In what time will \$5,000 at 6% give \$60 interest?

Let x = the number of days.

then $5000 \times \frac{6}{100} \times \frac{x}{360} = 60$

$$\frac{5}{6}x = 60$$
$$\frac{x}{6} = 12$$
$$x = 72 = \text{the number of days.}$$

(5) I owe a man \$123 to be paid in six months. If I pay him now, how much should he be willing to take, money worth 5%?

Let x = the money I should pay now, then x + interest on x for 6 months = \$123.

$$x + (x \times \tfrac{5}{100} \times \tfrac{1}{2} = \tfrac{x}{40}) = \$123$$
$$x + \tfrac{x}{40} = \tfrac{41}{40}x = \$123$$
$$\tfrac{x}{40} = \$3$$
$$x = \$120 = \text{the present worth.}$$

(6) What principal in 60 days will give \$80 interest at 5%?

Let x = the principal,
then $x \times \tfrac{1}{20} \times \tfrac{1}{6} = \$80$
$$\tfrac{x}{120} = \$80$$
$$x = \$9600.$$

Bank Discount.

I shall close this paper with a story in Bank Discount. In teaching a subject like this it is first necessary to lay down a foundation of ideas before work on problems is attempted. These ideas are of necessity vague at first. We do not proceed from the known to the unknown directly. Each explanation by the teacher, each problem done, may help to clear away the mists which obscure the mental vision. Problems are given to assist the child in understanding, but these alone will not make the subject matter plain. It is expected that in the doing the mind shall be stimulated to thinking. This I have found very unsatisfactory with the deaf. The whole subject must be talked over again and again until the child understands the meaning of the thing it is doing.

STORY ABOUT BANK DISCOUNT.

John Smith is a Kansas farmer and also deals in horses. He has thirty horses for sale and decides to sell them in

Pennsylvania. He writes to an agent who lives at New Holland, Pa., telling him to advertise his thirty horses for sale at New Holland on April 1, 1909. Sale bills are printed and are put up in stores, hotels, mills, and blacksmith shops where farmers read them. On April 1, the farmers come to the sale at New Holland. John Smith is there and tells the farmers that they do not need to pay cash for the horses. They do not need to pay for the horses for three months, if they can give notes with good indorsements. Elmer Eby, a Lancaster County farmer, buys a horse for $180 and gives John Smith the following note:

$180.00 New Holland, Pa.,
April 1, 1909.

Three months after date, I promise to pay John Smith, or order, One Hundred Eighty Dollars, at the First National Bank of New Holland, Value received, without defalcation.

ELMER EBY.

Back of note:

Kuhn and Foster are wealthy farmers who are Eby's neighbors. Perhaps Eby will put his name on their notes if they buy horses. John Smith wants several names on the back of each note. Why? Because the persons whose names are on the back of the note must pay for the horse if the person who signs the note does not pay. If Eby

cannot pay Kuhn must pay and if Kuhn does not pay Foster must.

Suppose the sale is over. The farmers have gone home with the horses they bought. John Smith has a handful of notes, but no money. The farmers do not need to pay money for three months. Will John Smith wait three months at New Holland, until July 1, for the money, or will he go home to Kansas and come back for the money? He will do neither. He must attend to his business in Kansas, and it is too expensive for him to come East for his money. He will sell his notes to the First National Bank at New Holland. Eby promised to pay John Smith, *or order*. "Or order" means any person or bank to whom Smith orders them to pay. If he sells his note to the First National Bank of New Holland, he will write on the back of the note below Kuhn's name and Foster's name—Pay to the order of the First National Bank of New Holland.

JOHN SMITH:

How much will the bank pay Smith for Eby's note? It will not give him $180.00, because the bank would have to wait until July 1 before it could get $180.00 from Eby and so would lose interest for 3 months on the $180.00 it paid Smith. The Bank will buy Smith's notes if he is willing to subtract interest. The interest on $180.00 for 3 months at 6 per cent. is $\$180 \times \frac{6}{100} \times \frac{1}{4} = \$2.70$. This interest is called Bank Discount. $\$180 - \$2.70 = \$177.30$ = what Smith receives for Eby's note. $177.30 is called the *proceeds*. So you see that Bank Discount is the interest which is subtracted from a note for as many days as the note is sold before it is due. The bank buys all of Smith's notes, subtracting interest for three months at 6 per cent. He must put his name on the back of each note.

Smith goes home. On July 1, the farmers must pay their notes either by going to the Bank at New Holland

or by sending their checks to the Bank. Eby, who lives at Paradise, pays for his horse by check. He keeps his money in the Paradise National Bank. His check reads as follows:

Paradise, Pa., June 30, 1909.

First National Bank of Paradise,
Pay to the order of The First National Bank of New Holland
One Hundred Eighty and———— $\frac{\text{no}}{100}$ Dollars.
ELMER EBY.

The Bank gets Eby's check on July 1 and sends him the note which he wrote when he bought the horse. Each farmer gets his note back when he pays the money he promised to pay. The farmers will tear up or burn their notes.*

Some educators of the deaf have classed Bank Discount among subjects too difficult to teach to the deaf. It should be taught because of the mental discipline involved. The above setting is simple and opens out a panorama of business ideas, just what deaf children need and enjoy. The above transaction is discussed for several days and is referred to again and again. It is the focus about which discussion centers. The picture of John Smith selling his horses and taking notes in payment, then selling the notes to a bank for a little less than face value and going home with his money, and the farmers later paying the bank for their horses instead of Smith—this picture stirs up mental activity in a very satisfactory way.

The pupils ask me many questions and in a few days are satisfied that they understand what Bank Discount

*The reader must assume that a knowledge of notes and checks on the part of the pupils antedates this lesson in Bank Discount.

means and may give me a satisfactory definition of Bank Discount. Some of the boys will do this immediately after reading the above story; others may have a less definite conception and yet may be able to pass a better examination in the correct use of English than the former.

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REFLECTIONS OF AN EX-EDUCATOR OF THE DEAF.*—III.

The Problem of Variation.

Those who have read my preceding contributions will remember that the last topic discussed was "The True Criterion of Success" in deaf-mute education. This was the first of four undetermined issues still awaiting, to the best of my judgment, satisfactory settlement.

The second was set forth in these words: "In seeking to adapt methods to material in hand, how much significance must we attach to variation among children?" Like the artist, the educator must not only have a clear ideal of what he shall produce, but also an accurate knowledge of the materials with which he must, as best he can, accomplish his purpose. The skilled mechanic may see the finished locomotive very clearly in his mind's eye, but what if he cannot tell steel from iron? What boots it, if the bridge-builder conceives distinctly the design of his bridge, but cannot calculate strains and stresses or

*Continued from the January number of the *Annals*, page 23.

determine strengths of wood, stone, and steel? We may excuse love-blinded parents for thinking wooden material equal to Bessemer steel, but not the expert educator. He, at least, must know the strains and stresses as accurately as possible, and not demand of wood what steel alone can sustain.

If all children in their congenital endowment and early acquired characteristics were of one uniform type, our task would be enormously simplified. Though a rifleman may see his target plainly, yet if he is given a gun of different calibre and penetration for every trial, his undertaking becomes extremely complex. If he impatiently shrugs his shoulders, and proceeds to shoot without recognizing variation in his guns, the result is absurd. But if the educator does likewise, the result is pathetic. Bullets suffer nothing when they miss their mark: the children of men suffer deeply and irrevocably.

It is very puzzling and often trying for the educator—this perverse inclination of Nature to experiment with endless variations of the *genus Homo.* Why she brings into being at all some kinds is a mystery—the monstrosity, the idiot, the imbecile, the moral pervert, the odd child that passes finding out for many years and strays far from its parents' fond dream or waywardly demonstrates the inadequacy of some sovereign method of education. The parent has suffered so much, the teacher has striven so hard, and then to be disappointed!

As parents often cling vainly to the dear delusion that their child will some day vindicate their hope, so do educators too often cling persistently to the dear delusion that their pupils will yet vindicate a chosen method. As children vary infinitely, from the imbecile to Helen Keller, some will appear out of the many who do succeed. Then comes *one of the subtlest temptations that enter the teacher's life.* More or less unconsciously, but none the less truly,

his interest concentrates upon the individuals who do succeed, his thought dwells upon them, his argument cites them, his yearning for reward finds satisfying fulfilment in them. As for the rest, they are assimilated with the unlucky, the misfits, and are patiently brought along as far as they can come by this method together with such simulation of success as may be devised to rejoice the hearts of parents and trustees. There is not one of us but has felt the stealthy pressure of this dangerous temptation, and many there be that yield to it.

But, for one, I cannot close my ears to the slowly gathering cry of protest from these "misfits." There was a time when all deaf-mutes failed to fit into any known method of education. But De l'Epée and Heinicke showed how method could be fitted to child. What they began, as pioneers, we must carry on to ever-increasing perfectness of adaptation. They gave us the great keynote: since God does not create children to fit any one method, let man fit method to child.

But truly this stubborn fact of infinite irregular variation presents a difficult problem. To recognize it theoretically is easy, but to devise practical adaptations of method is hard. Both as teacher and parent I am continually confronted by it, and this experience has inspired much study of the subject together with an ever-deepening sense of its baffling complexity.

Even if we had a teacher for every child, this would not guarantee ideal results, for it would still remain to learn unerringly just what each child needs—a problem that mother-love itself, though it be lighted with ample intelligence, often fails in bitter sorrow to solve ere too late. Then, too, as every executive keenly realizes, this all-pervading variation is found, not merely among pupils, but *among teachers as well.* And, again, there is for the deaf child that further special disadvantage arising by

reason of being withdrawn from the normal environment, wherein Nature provides an objective variation largely complementary to the subjective variation in her children.

I have often been deeply touched to see the agony with which a mother resigned her deaf child to the "institution." Mother instinct often feels unerringly where reason cannot explain, and thus is she warned that her child—in passing from mother, home, and community—is being a second time touched with misfortune, such as the hearing child does not know. What she dimly feels is to-day corroborated by social science, which declares that orphans or abandoned children thrive better when "placed out" in private homes than when consigned to "institutional care." Nevertheless, so profoundly exceptional is the deaf child's case, that resort to institutional care and education is the lesser of two evils. This could be overwhelmingly demonstrated to any sociologist in accordance with his own data and principles. But this is not the place to enter upon that theme. It must suffice to say here that, while institutional care and education is dictated by the exceptional features of a deaf child's situation, we must never forget that it does involve the imposition of a second handicap, as compared with the hearing child's educational outlook.

The contrast between ordinary and institutional environment has emphatic bearing upon the problem of variation. Where, for instance, a great number are to be fed in one dining-room, it becomes impossible to suit individual needs and tastes as may be done in the private home. Similar is the case in feeding the mental and moral nature of growing children. An institution must perforce be more or less of a Procrustean bed, compelled to ignore individual variations to a much larger extent than is necessary in the home. Within the class-room deaf pupils have rather the advantage of hearing pupils

in our public schools in that much fewer are assigned to each teacher. But outside the class-room the environment consists of one or more large dining-halls, dormitories, study-halls, playgrounds, etc., where many children are handled *en masse*, where the sexes are completely dissociated (even brothers and sisters), where pure play is greatly cut down, hampered by the unwieldiness of numbers, and severely limited in scope for individual choice of amusement. The deaf child is, therefore, surrounded by relatively monotonous uniformities, finds comparatively little chance for *exercising individual initiative*, and sees or experiences but little of that world which the language he is learning symbolizes.

That in large measure these characteristics of institutional organization are quite unavoidable is admittedly true. I am careful to set them forth only because there is such a thing as heightening or diminishing this divergence from the normal environment, and therein lies the key to a partial solution of the problem of variation. I doubt if there is to-day any more important or potentially fruitful subject of study for educators of the deaf than the one just presented. I feel that too much has been overlooked, taken for granted, or misapprehended altogether in this particular connection—a fact largely due to the effect of isolation in this same institutional environment upon *educators* of the deaf, for they do not escape its effects any more than their pupils. This leads me to say just here, by way of parenthesis, that I believe it would be sound policy to have all teachers "live outside" just as far as possible, and, further, to have as many men of family, with normal home and community contacts, as finances would permit. Of course this is no new idea. but with advancing study and breadth of outlook upon our educational problems, the meaning of it strikes me with redoubled emphasis. Some very significant facts

might be cited in this connection, but would lead us astray from the main point.

Now, in regard to variation I would direct attention for a moment to one important phase, not inherent in the child, but in the environment from which he comes and to which in most cases he must return. For instance, one child comes from the country, another from the city; one from a sea-port town, another from a mining district; one from a well-to-do stratum of society, another from a poverty-stricken level, etc. Each of these distinct environments develops a vocabulary, a style of language, a body of habits and ideas and daily occupations of its own. Where the child is left to grow up in his home, Nature provides automatic adjustment of the child's vocabulary, style of language, etc., to the environment he will occupy at maturity.

Not so is it with the deaf child withdrawn to an institution, where all alike acquire a common equipment and a common viewpoint from which to see and interpret life. Returning vacation after vacation for a brief period, and finally for good, to their several different environments, they are ill-adjusted in many ways and are at a disadvantage in consequence. I see no complete cure for this, since it is impossible to reproduce within the institution those varying modes of life that exist outside. But a clear perception of the disadvantage alluded to should lead to special care in endeavoring to correct it just as far as practical limitations will permit. Such is the character of some home environments unfortunately that we most distinctly do *not* wish to educate the child in adjustment thereto, but to a higher level. This, however, is not true of the great majority of homes, and meantime it is misdirected effort to develop with great pains something that afterwards will be atrophied through ill-adjustment, while possibly failing to develop what

afterwards turns out to be the real practical need in a given environment. Nature does not waste feathers on fish. On the other hand, she takes care that ducks shall have webbed feet and owls big eyes.

Turning now to the subjective variation in child nature itself, we have a subtle and baffling matter to handle. Deaf pupils vary in some respects comparatively obvious and quickly discernible; again in other respects more hidden and slowly revealed. Differing degrees of deafness, differing ages at which deafness occurred, various physical imperfections at other points than the ear, and other such sources of variation, are easily detected. Far otherwise is it with those deeper variations from virtual imbecility to astonishing brilliance, from flabby passivity to tireless persistence, from the dull, unresponsive temperament to the sensitively alert, responsive spirit, from the hopeless case of arrested development to the continually surprising case of potential capacity steadily unfolding fresh powers. Further, these variations do not combine in different children according to any rule or principle, but appear in endless permutations and combinations. No puzzle ever invented is half as baffling as this eternal riddle of variation among the children presented to us for wise education.

In the face of this stubborn fact of infinite variation what is the very first conclusion forced upon us touching the practical policy to be pursued? Clearly that there must be *correlative variation in the educational process applied.* Of course minute adaptation of method to every individual case is impossible, save for rare exceptions. But differentiation into groups, defined respectively by some characteristic of decisive nature in its bearings upon the educational process, is quite practicable, and it should be the persistent endeavor of our educators to achieve this superior organization in adjustment to broad type-variations.

Neither De l'Epée nor Heinicke labored in vain, and those who believe that a thoroughly scientific system of education for deaf children can dispense with the contribution of either of these pioneers are singularly out of touch with facts and principles daily becoming more significant as educational science progresses.

Just here I am moved to comment upon a curious phase of the situation, past and present, as regards this work of deaf-mute education. As between various possible adaptations of method the educator's own attitude should be entirely without personal feeling or attachment. No sensible man permits a sentiment of loyalty to possess him, attaching him by personal feeling to gold or silver as a money metal, to protection or free-trade as a state policy, to one railroad or another as a means of transportation. These are merely inanimate, impersonal means to ulterior ends, and it would be absurd to form sentimental attachments and faithful loyalties to such things. Strong feelings of this kind are appropriate only in connection with persons or eternal principles. As between various methods of educating a deaf child we should be as open-minded and detached in feeling as when choosing a microscope or a typewriter. That this has not been the case far too often throughout the profession I need hardly state.

Now, in what respects may the educational process be varied in correlation with the type-variations among deaf children? The educational forces continuously acting upon a deaf pupil consist of the class-room instruction by one or another of several methods, the influence of institutional environment, the interaction of child upon child, the intellectual and moral reactions of adult example at all hours, etc. Not one of these forces is a fixed element, incapable of modification for the purpose of securing ever closer adaptation to special needs.

Class-room instruction admits especially of accurate

adjustment to varying individual needs. No complete study of this topic is possible here, but I shall venture a few observations as to the two leading methods most generally used to-day, viz., the manual and the oral respectively.

As regards the former, it demands no particular type of deaf child. The bright, healthy child will learn more, the dull, undervitalized child less, as under any kind of instruction. No one questions that the manual method is applicable to all deaf children, just as the ordinary hand-tool methods of agriculture will serve for all kinds of country.

But agriculture by power machinery, while admittedly producing a larger product per unit of cost, is restricted in the extent of its practicable application. Nature has supplied immense regions of level or gently rolling land, free from rocks or other obstructions; but again there are millions of acres of good soil not so fitted for machine cultivation. To me it seems clear that the oral method yields richer results, where applied to subjects of suitable type and capable of responding with true success, but that it requires in addition to the usual qualifications certain favorable endowments by no means universally possessed.

The subject-matter to be mastered is common to both manual and oral pupils. It is in the mode of communication that differentiation appears. Writing and hand-spelling demand no initial qualification but such as are quite generally possessed. Speech and speech-reading, on the contrary, do call for physical and mental qualifications in addition to the above that are wanting in many deaf children.

On the side of physique the oral pupil needs a vocal apparatus unimpaired anatomically and supplied with perfect sensory and motor-nerve systems. Important as these nerves are in the normal case, their perfect development and functional activity is simply indispensable to the

child learning to use human speech without help from the auditory system. But I am convinced that precisely here a considerable variation exists among deaf children, this being accentuated by the same causes that destroyed the auditory system.

Again, the part played by vision is of accentuated importance to the oral pupil. By this I do not mean alone the mere act of seeing, as one may see a butterfly float by, but also that alert and keenly analytical observation, which is far more psychical than physical. There are those who, having eyes, see not, and would never note the butterfly's size, coloring, shape, choice of flowers, etc. Speech-reading requires a vision capable of detecting infinitely delicate and fleeting indices upon the human face, and instantaneous interpretation thereof. As there are people well endowed with this faculty, so just as surely are there others badly defective in this respect.

Still again, there is another peculiar faculty of critical importance in speech-reading, but wanting in many individuals. Not even the most expert speech-reader can ever catch every word spoken, and the percentage of *lost words to be guessed from context* increases steadily with each step downward in ability to catch single words as such. This operation of supplying rapidly and accurately the lost words merely by means of context is one of supreme difficulty. If you wish to realize the nature of this mental effort, just get some friend to write several pages of discourse leaving blank every fourth or fifth word. As you receive this in your hand try to read it smoothly and rapidly, as would be necessary if taking it from the lips of a speaker. Then reflect what peculiar faculty is required for this process of unhesitating impromptu word-coining to supply the gaps. Do you think every one is equally endowed with this gift?

It is a gift that a large fraction of mankind does not

possess. Mathematical attainments come easily to some, while for some language attainments require intense effort. The particular operation of guessing lost words from context undoubtedly requires a form of mental endowment that some possess in exceptional degree and others scarcely at all. Herein lies a phase of variation, therefore, of peculiar bearing upon the problem in hand. If I had the opportunity I should like to test in a tangible, accurate manner the degree of this specific gift in numbers of deaf children, by having groups of them read at the same instant duplicate copies of some story or conversation, wherein a certain percentage of the words had been left out. I would vary the experiment by trying classes in different stages of advancement, and giving tests of twenty, thirty, and even forty per cent. omission of words. In all cases I would record the time occupied by each pupil and the percentage of error in supplying the proper words. I believe such experiments, conducted carefully as in the modern psychological laboratory, would yield valuable light upon several points not now sufficiently recognized.

The candidate for education by the oral method, we find, must have certain qualifications of physique and mind not necessary in learning by the manual method. When I say "must have," I mean, of course, that these qualifications are vital to *true educational success.* Almost any child can acquire facility of some kind as a performer on the piano by dint of sufficient instruction and persistent practice. But not all can learn to bring forth true music. Cotton can be grown in Kentucky and tobacco in Georgia, so far as it is a question of absolute possibility. But the great principle, that common sense dictates, is found in *the proportion that results bear to cost.* And by "cost" in the present connection I mean, of course, not merely money outlay, but psychic cost especially. Sparta produced invincible soldiers, but only at fearful "psychic cost"—a

fact clearly revealed when we contrast the vast influence of Athens upon the world with Sparta's slight and transient impress.

Has every deaf child these additional qualifications? An affirmative answer to this merely denies one of the most significant and far-reaching facts revealed by the science of our time, viz., the presence of subtle and infinite variation in the inherited endowment of individuals. Are fifty per cent. of our deaf pupils thus endowed? Perhaps so and perhaps not. So far as my information goes this question has never been answered by a process in accord with the canons of scientific investigation. As it is just this matter that I purpose to discuss in the next paper of this series, I leave it for the present.

Meantime, it is clear that class-room instruction, being the most positive and effective of all educative forces, should be adjusted with conscientious care to the actual type presented by each child, or, if methods be regarded as the fixed element, then each child should be assigned to one or another as variation in type demands. The agriculturist aims at profit, not at proving that a given product can be successfully grown on *all soils*. The educator of the deaf aims at bringing out manhood and womanhood, not at proving that a given method is successful with *all* deaf children. And human individuals vary far more widely than soils.

The institutional environment is the next educative force to be considered. It involves some disadvantages not to be got rid of, but I think this handicap could be much reduced by attentive study to that end. An orderly system of transferring primary classes, at least, to environments more like those in which the hearing child acquires language, would overcome in some part a grievous disadvantage. I believe this is done to some extent in some schools. But a clearer realization of the situation would

lead to a much wider extension of this system. Beginning with that which could be found within the institution, viz., a private bed-room, the parlor, the kitchen, the barn, the farm (if there be one), etc., the appropriate vocabulary and idioms could have their first introduction to the mind in the direct presence of the things and acts symbolized. Then advancing to that which is outside the institution, viz., the public highway, a private homestead, a cemetery, a church, a stream or body of water, etc., the associated drama of human life could be seen directly as the appropriate language is supplied or else presented by suggestive pantomime. Thus the deaf child's process of gathering language would approximate much more closely that of the hearing child. After a good start on this basis, where the symbol and the thing symbolized are not linked by a weak artificial process, but directly as under normal conditions, then such excursions would slowly become unnecessary. As the college sends its classes in geology or civil engineering forth from the class-room to the fields, where their problems become real, so should the institution send classes in language out of its school-rooms to the scenes where vocabulary and idioms become alive with direct suggestion and association. To be deaf is handicap enough, without also having to learn words upon words in total isolation from the things and actions they represent.

Just here I am moved to point out what seems to me a serious error in the thinking of a good many. I have noted among educators of the deaf a habit of urging that "English is to be learned only by the use of English." New words and expressions must be interpreted only in terms of vocabulary already learned. The deaf child must by all means be confined to the use of English just as far as watchful discipline can accomplish that end. There seems to be such a plain analogy here to the process of learning to skate or play a piano, where "practice makes

perfect," that a certain profound discrepancy has been too much overlooked.

Language is not a mechanical operation but a vital growth. Its roots must be imbedded in environment, in realities, in personal experiences—not in representations of environment, not in artificial symbols of reality. True, the mistletoe has no root directly in the soil, but lives upon the sap of the oak. But of what real strength and value is the mistletoe as compared to the oak? I call the language that has been born merely of other words, that has been interpreted only by reference to still other symbols, a parasitic language. Let me illustrate concretely what I mean.

A very large part of our language power is inevitably founded, of course, upon previously existing language, *e. g.*, we come to use many terms that were explained to us *via* the dictionary or similar means. But before we ever could construct this more artificial superstructure of language, we had developed a real, living foundation rooted deep in actual sensations, direct perceptions, and lively associations. We learned what "death" means, not in terms of other words, or by pictures, or by sheer repetition in many contexts, but on some day when we stood startled, puzzled, awed in the presence of death or with a dead pet cold in our hands, and some one said, "He is *dead*."

We learned to know what "I told you so" means, not by the parasitic reliance upon other words, themselves mere symbols, and not when unconcernedly striving to be interested in class-room artifices, but probably when we had got to romping too recklessly in defiance of warning advice, and then in a moment of resounding collision, with numerous stars in the mental sky, came the words," I told you so!"

It was not *primarily* because we used English only nor

because we had so much practice in its use, that it became second nature to us, but because this language was built into our psychological life word by word, sentence by sentence, just as something within us yearned for a particular expression, just when some lively experience was accompanied then and there by its appropriate language. To see the little deaf toilers, striving amid the limitations of the class-room and all its artifices to acquire verbal language as a *real living power of expression*, stirs my pity. I know not how their great handicap can be removed, but sure I am that instead of using means for reducing it many of their educators have deliberately accentuated this very handicap by devising a rigid system for propagating English by English. True language is the child of two parents, environment without and mind within, nor can it be a healthy, vigorous child without that vital union of the two elements. If institutional limitations forbid the presence of normal life environment, then I should do my best to make good that loss by frequent excursions from the class-room as one means, and by vivid pantomime as another means. It is one thing to try to appreciate a Shakesperian drama from the printed words, quite another to appreciate it from the concrete presentation on the stage. Similarly, it is one thing for a deaf child to appreciate the meaning of "A boy was rowing a boat. Another bad boy rocked the boat. It was turned over. Both boys were drowned," when all this is explained simply in terms of other words, instead of that lively pantomime with which I could make almost the actual exciting scene live before the child's eyes. In the former case merely parasitic English is the result; in the latter case English more akin to what the hearing child absorbs. No; it is not primarily the "English atmosphere" that develops English or the "French atmosphere" that develops French, but the atmosphere of moving, throbbing life, of ceaseless action,

emotion, stimuli of every kind, all of which the mind slowly registers within itself by means of language—English, if that be current, French if that be current. The educator of the deaf finds *his true problem in how to bring that atmosphere to his pupil as realistically as possible at the moment language is being supplied.*

Returning now to the main line of our discussion, we have next the important educative force found in the mutual reaction of child upon child. I have recently become especially interested in watching the operation of this force, and am inclined to believe its importance as a factor in each child's development has been too much overlooked. It corresponds in child life to that incessant friction, give and take, mutual interchange of observations, criticisms, and inspirations, which in our adult lives is overwhelmingly significant. This mutual interaction is largely an unconscious force, silently tending to reduce marked individual variations through conflict or imitation. It is here that personal initiative gets free scope for development, that emotions have play in normal fashion, and the moral nature is developed in the constant attrition with other personalities. But the full value of this developmental force cannot be gained, unless the children as between themselves are without constraint in respect of communication during their out-of-class hours. Unless they can play, quarrel and debate over "the rules of the game," draw distinctions in their childish way between things and qualities, and thus turn loose their thoughts and feelings spontaneously as stimuli are experienced hour by hour, there is dangerous tendency toward lethargy and stagnation—a condition more to be feared by the true educator than any other. There are all degrees of this condition, and some may be under the delusion that their pupils are as free from it as any to be found, whereas their notion rests upon absence of comparison with the atmos-

phere to be seen on play-grounds where no constraint whatever exists. It is my own conviction that the sign language plays perhaps its most useful part in affording deaf children a means of free communication far in advance of sufficient English to meet their needs in that respect. Through it as a channel mutual interaction can go forward freely, thereby affording a supplemental educative force of no little importance.

Then there is the altogether inestimable educative force of adult example, of the mature intellectual atmosphere that may continually give suggestions and stimulants to the less mature minds following behind. Of course I refer now to the influences at work outside the class-room routine, where an earnest, faithful teacher can be of unmeasured help to the pupil body as friend, guide, adviser, coach in various activities, and a source of light generally in other connections than such as belong to the class-room. I feel that such a teacher should make it a principle to use verbal language whenever this serves the purpose well, but should never make this a fetish to which he must sacrifice every opportunity to do good, should circumstances forbid the effective use of such language for his purpose. We do not forbid fire, as a servant, though it is a terrible master.

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[TO BE CONTINUED.]

THE THOUGHT AND LANGUAGE OF THE DEAF-MUTE. AN INQUIRY CONCERNING THE TRUE FOUNDATION OF DEAF-MUTE INSTRUCTION.*—III.

Chapter II—Continued.

Many objections will be raised to the ideas above expressed. But, after all, there can be no valid objection. Our thinking depends upon a wonderful combination of psychical and physical processes. Indeed all the movements which we were originally forced to perform in order to grasp this or that idea can be considerably diminished; in fact they can even be performed in our "imagination." The word "imagine" designates the process exactly, if we conceive it in the sense of forming images within. The movement corresponding with a kinesthetic conception can at any time be checked, either consciously or unconsciously, so that it will produce but little or no visible outward effect; in fact, however, this imaginary movement is not different from the one really performed. The "imaginary" movement perfectly represents the real movement in our consciousness in all cases where clearly defined and thoroughly familiar ideas are concerned. But if we try to comprehend the content of new ideas, or if we try to explain things to other persons, the outward movements play a very important part. This fact has not been sufficiently recognized in our modern instruction of the deaf. Our method of instruction has even fundamentally opposed it and has thus barred the way to a true recognition of the sign language.

*Continued from the March number of the *Annals*, page 190.

It need hardly be mentioned that the *articulated* word cannot be regarded as a movement of expression corresponding to the process of thought *occurrence*. The word indeed requires physical movements, but these have nothing to do with the act of perception and the conscious combinations of conceptions. We must, therefore, not think of having the speech movements take the place of the outer movements connected with the processes of thought. The pure oral method has made this mistake in laying down the doctrine that the word must be "directly" associated with the "thing." Let us assume this so-called thing to be an individual object, a table for instance; then it must be apparent to one who looks more profoundly into the matter, from a psychological point of view, that we have actually nothing to do with the real object, the individual table, but with a thought picture conforming with this reality, therefore, logically viewed, with the idea. Only with this can the word be associated; only its content and its picture is the "bearer" of the word. But the thought process actually includes those movements which come to the aid of the comprehension of the thing; therefore they cannot be excluded; and consequently the sign language, being based upon these movements, cannot be excluded.

After the psychological character of the comprehension of an idea has thus become clear to us, let us consider the more logical side of the idea.

Traditional logic formerly strove to separate the content of an idea from its extent. Under the content of an idea, as is known, were understood the so-called "essential" characteristics; under the extent the "individual things" which the idea is supposed to contain. This theory prevailed for a long time, as above stated, but its insufficiency finally led to its abandonment. One could not for all time push aside all the certainties which were not num-

bered among the essentials; they, too, have a very important part in the "law of life." Whatever the existence of a thing requires and furthers is essential to that thing, belongs to its idea. Consequently the difference between essential and non-essential characteristics in the sense of traditional logic has passed away, and this is a matter of some moment in the comprehension of the mental and linguistic development of the deaf-mute. The old prejudices regarding the ability of the deaf to form ideas have thus lost their foundation. On the other hand the fact has been recognized that it was an error in logic to include "individual things" in the extent of an idea; the relation of an idea to reality has had to find expression in some other manner.

An important step in the progress of the doctrine of the idea was made by Alois Riehl, Professor of Philosophy in Berlin, when he differentiated between the content, extent, and import of ideas. He maintained that "ideas cannot be subordinated to things but always to other ideas."*

Now the import of the idea was sharply differentiated from its content and extent, since, according to Riehl, the import was numerically, that is, as regards the number of objects and cases, not at all considered; he attributed to it no influence upon the content (the parts of the idea) nor upon the extent. "The import of an idea," writes C. von Brockdorff in explaining Riehl's theory, "may even disappear without affecting the existence of the idea." It would not affect our idea of the lion, for instance, if any number of lions were exterminated, if whole families were destroyed; or, to take another example, if all the

*In his "Beiträge zur Logik" Riehl writes: "The objects to which the idea in question might be applied never belong to the extent of an idea (these rather form its import); but only the ideas subordinate to it, into which it then passes as part of the content." See "Beiträge zur Logik," Vierteljahrschrift für wissenschaftliche Philosophie, vol. xvi, p., 139.

countries on earth became democratic republics, this would not change our idea of a prince or of a nobleman.†

Satisfactory as Riehl's theory is for the nature of the idea, we must not overlook the fact that it depends on the necessary inner connection of the content, extent, and import of ideas. With this knowledge we approach the real nature of the idea on its logical side.

It is the undisputed merit of the philosopher Cay von Brockdorff that he developed the above-mentioned doctrine of his master and brought it to its true conclusion. With his acute intellect he recognized that we must not place the content, extent, and import of ideas in opposition to one another in such a way as to accept a fundamental opposition among them; on the contrary he teaches us to recognize that each is connected with the other and that each must be thought of in the other. Accordingly there exist identities in the nature of the content, the extent, and the import. The extent belongs to the content and the same must be said in another sense of the import also.

Let us first regard the relation between the content and the extent. Von Brockdorff says: "We do not think of the content separated from the extent." But as we still distinguish the content from the extent, we must ask: "To what purpose or for what reason do we do this?" Under the content of an idea we understand the regular parts, the individual relations, which arrange themselves in us through the recognition of individual things and individual cases: "the unity in the individuality" includes the true parts of the idea. The definition describes in sign or verbal expression only what the idea contains. When we speak of the extent of an idea, we think of all the subordinate ideas (as, for instance, in the zoological

†See C. von Brockdorff, "Die philosophischen Anfangsgründe der Psychologie," page xxvi.

classification, the tetrabranchiata are subordinate to the cephalopoda), which appear in our mind as soon as we more closely approach the recognition of the conceived unity. It must now be evident that the extent is thought of at the same time with the content. For all classification presupposes the knowledge of the content, and is made on the basis of comparisons in content. If the extent of the ideas arranged in the form of pyramids owes its position in the arrangement to the content, it is nothing else than the observation of the content. The purpose of the separation of the content from the extent is psychologically evident, when we consider that we cannot actually overlook the many single elements of the conception, that we are everywhere constantly comparing and never stop at a single individuality, that we moreover always ask regarding the purpose and the reciprocal action of things. From these circumstances in all occurrences we first comprehend "the general form of the occurrence" (signs!) and in the objects the characteristic form, the "type" of the things perceived (signs!). If we picture to ourselves the idea, there generally first appears to us the general form in which we thought of the idea, but we do nothing else with it than take the path from the universality to the individualities. If we study out the idea we do not stop at the parts of the content; we pass uninterruptedly to the subordinate ideas. Thought, however, generally proceeds rapidly, pictures crowd each other; therefore we content ourselves with a general formula, which briefly characterizes the process of thought, but points out in "implicit form" everything signified by the content and extent. For this reason the regular parts of ideas (popularly but wrongly called "essential" characteristics) always appear in the foreground of the consciousness and of conceptive thought; they have, therefore, secured the highest consideration and everything else

has been overlooked. "The true idea, however, is nothing else than the full truth about an object." Thus the distinction made by traditional logic between the essential and non-essential characteristics of an idea is finally dismissed, being robbed of its fundamental character.

As the outward sign for the above mentioned "general form" of conceptive thought, and for the "type" of the thing perceived, verbal language has created the *word*, while for the many single ideas it has created single words. As we have already said, the word appears as something foreign to the act of perception and thought, except words of onomatopoetic character, and these take a subordinate part in the languages of culture. In the enunciation of the articulate word we perform different movements from those performed in the act of thinking. We there try to produce sound and tone, and only the acoustic result becomes a language sign. The word is therefore only an indirect sign of the idea; the natural sign on the other hand grows directly out of the immediate act of perception, out of the general process of thought, out of the whole concentration of our attention. The relation between verbal language and sign language will be considered further in the following chapters; in the meantime we will continue our observations regarding the true nature of the idea.

In a beautiful picture C. von Brockdorff explains to us the relation of word, idea, and definition. He writes: "If an admiral is on board his flag-ship, a flag is hoisted as a sign of his presence. This flag is saluted even if the admiral is not to be seen. He may remain below deck, but it is known that from his ship the whole fleet is directed. The flag is therefore a sign or representative of him who carries it. Thus the name of an idea is the representative of the definition. The definition may, so to speak, remain below deck, *i. e.*, it need not continually be expressed;

we salute the idea! We understand what it signifies. But in the beginning the idea must be expressed, that is, defined.*

Now how is the import connected with the content? We know that the ideas are not the real things and occurrences themselves, but that the latter constitute the import of the former. But we are also conscious of the fact that reality must form the basis of all our comprehension and that in our ideas we must come into contact with reality. C. von Brockdorff thus expresses this: "We do not disconnect our ideas (in content and extent) from the conception of reality. The idea includes its own import." Even the numerical extent of the import is in reality not of inconsequence to the legitimate content of the idea. The number of individuals, for instance, of a species of animals is from the beginning of great influence in the development of the species, therefore for the formation of its "law of life," and consequently also for the recognizable content of the idea. "Thus as far as the individual things are presented in their necessary connection and are taken as causes in one case and as results in another, they are parts of the content of the idea, which is again divided into subordinate ideas by grouping the individual differences." From this it is apparent that the import cannot be detached or removed in thought from the idea.

Pedagogy has long regarded ideas as objects of learning in the narrower sense; ideas were to be learned like the A B C, or the multiplication table. "Formalism" and "verbalism" exerted their powerful influence; but where anything was to be learned under the pressure of these influences, the labor of teaching and learning proceeded unnaturally and fruitlessly. The idea is not a mere pattern

*See Dr. Baron von Brockdorff, "Die philosophischen Anfangsgründe der Psychologie," p. xxiii.

or dead formula, but bears the character of organic, natural development. It therefore always requires considerable time to impress itself upon the mind with sufficient clearness and acuteness. Ideas, even as we use them in daily life, do not always present themselves clearly and with lightning-like rapidity: the mind often requires a long time to grasp them clearly. And even when a person applies them correctly and readily, he cannot generally meet the demand of scientific logic, that he shall be able to define them. A definition, even if only partly correct, always requires high mental and linguistic culture. A child and a common man of the people therefore nearly always fail when they try to explain their ideas in a "scholastic" manner. Still they have sufficient mastery of the ideas of every-day life; otherwise a mutual understanding and advantageous living together would be impossible.

People differ in the degree of mental acuteness that they display in the observation and combination of things observed; they differ also in age, grade of intelligence, and sphere of interest. How different are the single circumstances and experiences under which different individual persons get their ideas! In this regard one may say different people have different ideas—each one has and lives in his own world. I cannot directly determine whether a given expression conveys to another person the same content that it does to me. The only thing possible for me to do is to present the idea in signs or words that may give him points of direction for his thoughts and permit him to compare the expressions of his mental movements with those of my own. Still there must be a unity on the basis of which we may reciprocally understand and comprehend each other. It lies in the nature of our mind, in the regular character of the idea. We expect of our fellow men the same psychical and physical powers

that we find in ourselves; we therefore assume that they are mentally and physically influenced by the outer world in the same manner as we, that they acquire ideas in the same way and under the same circumstances. And we do not err in this supposition, for in the ideas resulting from our daily experience, there prevails in general sufficient harmony among great and small. Life takes every one into its school; everybody learns to comprehend "what is required for the sustenance and need of the body." The conceptions of these things, the thinking of the ideas, and the consciousness of attendant emotions, arouse in us "life processes" in which mental development takes place. It is in the mastery of this frequently disregarded but eminently important law of life that everybody wins his first spurs as a knight of the intellect. Here the ideas are really experienced.

In this field of experience the deaf-mute also is at home. He views things in the same way that we do and proceeds in their perceptive comprehension in accordance with the same laws.

From the number of movements which the process of observation and thought requires, he either selects one or unifies several, and thus forms a language sign for the "general form" of the idea. Even where he clings with his signs to the external and apparently secondary things, his thought moves in the direction of the true content of the idea, since the parts of the extent belong to the content of the idea. For it is the nature of human thought to select certain elements of the idea as a sign to represent the whole. We do not assert that the mind in this selection always hits upon the right thing, and therefore thinks and designates the one that is logically most important; for the degree of mental acuteness, practice in thinking, even accident, here play a part. But if the deaf-mute by his signs in many cases designates not parts of the in-

tuitive conception, but results, or even the purpose of things, it is a proof that he thinks according to the principles of the human mind. One need only ask little deaf children how they designate the objects of use in their daily life; almost invariably they will describe them in signs which express the purpose or the result of a thing. They thus demonstrate that they grasp the nature of things, that they think, that they comprehend.

In the next chapter we shall see how the thought of the deaf-mute was formerly judged. But this much may here be said: All the talk about the "sensuous" and "illogical" character of the sign language, about its inability to form "free" conceptions, about the "mirror-like" thought of the deaf-mute, etc., is shown in the light of the "true idea" to be a prejudice or a mystical view of the process of thought and speech.

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[TO BE CONTINUED.]

THE SIGN LANGUAGE. A MANUAL OF SIGNS.*—V.

OCCUPATIONS OF MANKIND.

IN indicating the individual following any occupation, make the sign for that occupation and add the sign for "-er," as follows: Bring the open hands, palms near the body and fingers pointing forward but inclined toward each other at an angle of 45 degrees, up to the breast; with the palms against the body, press them downward, indicating thus the individual.

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Law.—Hold up open left hand, fingers up, pointing the thumb toward you; lift up the forefinger of right "G" hand and throw it against the palm of the left near the end of the fingers; strike the palm this way several times but each time striking it lower down. For "lawyer" add sign above described for "-er."

Preach.—Hold up the right "F" hand above the shoulder slightly forward and out; in this position throw the hand out and down, toward an imaginary audience. For "preacher" add "-er."

Teach.—Hold up "&" hands, one on either side of the head opposite the temples; push them outward, opening them; repeat the action several times. "Teacher," add "-er."

Lecture, Orator.—Hold up the open hand to the side and front, as a speaker does in making a gesture; bring it down diagonally a little toward the other side and repeat motion several times. "Lecturer," add "-er."

Cook.—Place right hand on palm of left and turn it as if it were a pancake. "Cook" (one who cooks), add "-er."

Baker.—Would be literally "bread maker;" make sign for bread by holding bent left hand in front; with the right "B" hand used as knife, make act of cutting across backs of fingers; then imitate action of kneading, and add "-er."

Carpenter, Cabinet-Maker.—Make motion of planing a board; add "-er."

Printer.—Make motion of printer in putting type into a stick; add "-er."

Shoemaker.—Push the ends of the forefingers of "G" hands toward each other as if they were awls forced through a piece of leather; bend the ends of the fingers and draw them away from each other as if they were drawing back the thread. Or,

(2) Make sign for "shoe," thus: Push right "&" hand into the partly closed left hand, and sign for "maker."

Tailor.—Make motion of sewing and add "-er."

Dressmaker.—Sign first for "female;" then rub the hands lightly downward against the body several times, indicating its covering, for "dress;" then add sign for "maker."

Merchant.—"Seller." Indicate the kind of merchant by sign for what he sells and add "seller." Thus, groceryman is literally "sugar seller" or "seller of sugar, food, etc."

Build.—Build up the hands by placing the palm of one on back of other, like laying bricks, repeating the motion with each hand alternately several times, raising them during the action.

Artist.—Sign for "draw;" using the hand as a rest and the little finger as a brush, make motion of drawing, then add "-er." Or,

(2) Using both little fingers as brushes, holding them opposite, make motion (in the air) of drawing, adding "-er."

Farmer.—Sign for "farm," *i. e.*, bring the left arm up against the breast, or a few inches from it, so the "A" hand rests near left shoulder. Add "-er."

Blacksmith.—Pound the forefinger of the left "G" hand with the right "S" (little finger end); add "-er."

Doctor.—Place the forefinger of "D" right hand on the pulse of left hand and add "-er."

Nurse.—Same, but use "N" instead of "D."

Surveyor.—Hold the hands as if they were adjusting a surveyor's instrument in front of you; make motion of sighting and measuring along; add "-er."

Secretary.—Reach up the hand as if to take an imaginary pen from behind the ear; bring it down and make motion of writing; add "-er."

Treasurer.—Sign "money keeper."

President.—Reach the "C" hands up at either side of the head and grasp imaginary horns, carrying both

"S" hands out simultaneously; then sign "rule over" thus: bring left hand down, thumb toward the breast; open the right hand and reach it out and pass it over the left arm in a semicircle from right to left.

Vice-President.—Make sign for "president" and then "second"—holding right "V" hand partly upward and twisting the hand half around.

Governor.—The end of the forefinger of "G" hand is placed against the temple; withdraw it, describe a small circle in the air, and place end again on temple; next pass right hand over left, etc., as in "president."

Soldier.—Hold the "A" hands at one side one above the other as in holding a gun, soldier-like, against the side.

Captain, or Officer in general.—Place the hand upon the shoulder, thus indicating the shoulder straps or epaulets.

Army.—Sign for soldier and then for "class," *i. e.*, bring the "C" hands out and draw them toward each other to a central point.

Robber.—Draw the "N" hands (fingers) across the upper lip, from centre to side (one on either side) and add "-er."

King.—Place the right "K" hand just below the left shoulder, then carry it down to the opposite side of the body near the waist; add "rule over;" to this sign add "country" and we have "kingdom."

Queen.—Same with right "Q" hand.

Emperor.—Same with right "E" hand.

NOTE: In all of the last three, as well as in the case of all persons exercising power of authority, it is more correct to add "rule" as below.

Rule, Exercise authority over.—Hold the hands forward as if holding lines; pull first one and then the other; bring the left open hand, palm down, toward the right and against the breast and at the same time extend the right open hand, palm down, straight out and around to-

ward the left, describing a semicircle in front of the body from right to left, as in latter part of the sign for "president."

Superintendent, Foreman (the person exercising control).—Make sign for male, then follow with last part of sign as above, bringing the left hand in and the right out and over.

Adjectives and Abstract Nouns.

Note: In the sign there is no distinguishing difference, as a rule, between the adjective and the abstract noun. Whether one or the other is meant is determined by the context or the circumstances under which it is used. Comparison is indicated by following the sign for the adjective by a sign indicating the degree, without any pause, thus: For the comparative ("-er"), draw the "A" hand out toward the right side in front, raising it with a slight jerking motion to the height of the shoulder. For the superlative ("-est") make the same motion but carry the hand higher to a level just above the head. For example, in making the sign for "better" the end of the open hand is placed against the mouth and the sign for "good" is made, but before quite finishing it the "A" hand is brought up the side as indicated so that there is no stop made, the whole movement appearing as one sign. To make "than," bring the right hand from the sign of the adjective and degree quickly downward, palm down, past the left open hand, held vertically edgewise, pointing outward.

Good.—Place the end of the palm against the mouth; then bring it down against the open left hand so the back of the right hand rests in the palm of the left. In common use the latter part of the sign is omitted and the hand is simply thrown forward from the mouth.

Bad.—Same position of the hand as in "good;" in bringing the hand away draw it slightly toward the right, turn it palm down and throw the hand downward.

Old.—Place the "S" hand against the end of the chin and with a shaking or trembling motion pull it downward, as if pulling an imaginary beard.

Young.—With the open hands in front on a level with the waist-line, palms toward self, make a brushing motion with the ends of the hands against the body, upward, carrying them on away from the body. Repeat several times.

Long.—Placing the forefinger of the right "G" hand lengthwise near the wrist of the extended left arm, draw it up the full length of the arm to the shoulder.

Short.—Holding the "G" hands in front and elbows resting against the sides, bring the forefingers toward each other. Or,

(2) Place the finger of the right "H" hand edgewise upon the fingers of the left "H" hand, near the latter's knuckles; move the right fingers toward the end of the left.

Enough.—Hold out the left "S" hand and across the top pass the palm of the open right hand, making the motion outward.

Plenty.—Repeat the sign for "enough" several times successively and to make it more emphatic add "much."

Full.—Hold out the left "O" hand and pass the palm of the open right hand over it, making the motion from right to left.

Strong.—Hold out the "S" hands to the front from the side; moving them slightly to one side, describe a small arc or circle, making a show of using considerable force. The motion is something like slinging a sledge hammer.

NOTE: The sign for "strong" is somewhat similar to that for "can;" in the latter no circular motion is given the hands but they are brought straight down.

Weak.—Place the ends of the fingers of "V" hand in the palm of the open left hand; push the right hand

against the palm so that the fingers bend and the hand falls against the palm.

Clear, Plain.—Bring the "&" hands in front, pointing out, so that the thumbs and forefingers touch at a common point; move the hands outward and apart while the fingers are separated, bringing the hands to position of "5."

Obscure (hard to understand or make out).—Place the "5" hands palm to palm; pass the right across the left and back several times.

Soft.—Hold out both "5" hands with the fingers and thumb bent slightly toward each other; bring both hands to position of "&," as if pressing something soft in your hand.

Hard.—Strike the back of the left fist with the back of the right. Or,

(2) Strike the back of the left fist with the fingers of the "H" hand bent almost double, striking the middle joint of the middle finger on the back of the fist.

NOTE: The latter sign is often used in the sense of a "hard case," or a "hardened sinner," when made once and with considerable force. By touching the heart with the middle finger of the right open hand and then making sign for "hard" is indicated one without feeling, "hard hearted."

Difficult (hard to perform).—Place the "S" hands one above the other; then circle one around the other, moving both at the same time, the motion being outward and down (not from side to side). Make a show of some effort in moving the hands.

Easy.—Hold out the left bent hand, fingers pointing toward the right and slightly up; with the open right hand, brush lightly against the back of fingers, carrying the right hand upward and beyond the ends of the fingers.

Poor.—Holding the left arm over against the body in front, grasp the under part of the sleeve with the right hand and pull it down once or twice.

Rich.—Place the "&" hand, back down, in the palm of the open left hand, as in the sign for "money;" lift and let fall again once or twice and then draw it up, opening the hand and separating the fingers somewhat, indicating "much money."

Poor, Lean.—Place the thumb on one side of the face and the forefinger on the other; draw them downward and draw in the sides of the cheeks.

Fat.—Hold the "5" hands, with fingers slightly bent in, one on either side of the face, and as you puff out the cheeks, draw the hands away toward the sides.

Cruel, Rude.—Hold out the left "G" hand with the back up; with the end of the forefinger of the right "G" hand held in a similar position but farther back, strike the left forefinger between the knuckle and the middle joint and push it along the entire distance of the forefinger and beyond; at the same time draw the left forefinger back; repeat this operation with the other hand, *i. e.*, left against right, and make the motion several times, using the hands alternately.

Rough (in sense of rude in manner).—Pass the ends of the fingers of "5" hand, bent, lengthwise across the open palm of the left hand, making the motion outward from the wrist to the end of the hand.

Rough (as to its surface).—Holding hands at right angles, pass the end of the right hand across the back of the left, giving it a waving motion as if it were passing over a rough surface.

Smooth.—Hold the "&" hands out and rub the end of the thumb against the ends of the fingers, drawing the hands a little away from each other. This sign also indicates "of fine quality." Or,

(2) First draw the right "G" forefinger across the length of the back of the left hand (held at right angles) and then follow with the sign as above. Or,

(3) Draw the right open palm, turned down, across the left open palm turned up.

Sharp (a sharp edge).—Holding the open left hand out, pass the end of the middle finger of the right "5" hand (slightly bent further in than the other fingers) along the lower edge as if feeling its keenness, then draw away the hand quickly, giving it a twist so that the finger comes to point downward.

Sharp, Shrewd.—Using the right open hand as a whetstone, make motion of whetting against the edge of the left open hand.

Sharp, Bright, Intellectually brilliant.—With the middle finger of the right "5" hand bent in, place the end against the centre of the forehead, then throw it off with a twist, so that when the hand comes to rest the fingers point outward. The motion is similar to that in first sign for "sharp edge," but the sign is made from the forehead instead of the edge of the hand.

Dull (as to edge).—Holding the left open hand in front, palm toward self, strike the bottom edge with the top edge of the right "B" hand brought up from below.

Dull, Stupid.—Strike the forehead with the fingers of the right "A" hand at the middle joints. Or,

(2) Strike the end of the left open hand, in front, palm toward self, with the fingers of the right "A" hand. Or,

(3) Hold the left "B" hand in front, palm down; place the right "C" hand so the thumb is directly under knuckle of the forefinger of the left and the "C" measures the imaginary thickness of the skull; move the hand along to the end of the forefinger, keeping it still in the same position.

Sly.—Same as for "shrewd." Or,

(2) Make sign for "fox," *i. e.*, grasp end of nose with the "F" hand and wave the other fingers of the hand; then follow with sign for "same" in sense of "like," *i. e.*,

bring the "G" hands together with the forefingers extended parallel. Or,

(3) A slang sign often used is to make the sign for "ghost" in a peculiar manner and very quickly, as follows: Make the shape of "U" with the thumbs and forefingers, extending the other fingers; place the right hand above the other, fingers pointing toward self; with a quick motion draw the right hand upward and the left hand down, and while doing so close the ends of the forefingers and thumbs. This sign is used to indicate that something is done "on the sly."

Tall.—Hold the open left hand pointing up; against the palm place the right "G" hand, end of finger pointing up; push the right hand upward the length of the left hand and beyond.

Short (in stature).—Hold the right bent hand out at one side indicating the height of the person described (real or imaginary); lower and raise the hand two or three times.

NOTE: For "short" in length, see preceding pages; for "short" in time, see under "Measurements of Time."

Bright, Glistening (as to condition).—Hold the "5" hand out till the ends of the fingers come nearly together; draw the hands upward and outward toward the side, giving the fingers a rapid motion like that made when playing a piano. The idea is the fingers represent scintillating beams of light. Or,

(2) Using one hand ("5"), draw it upward from left to right, describing a semicircle, and give it a waving or twisting motion all the while.

Brave, Courageous.—Place the "A" hands on either side of the breast so that they are just below the shoulder; in placing them there first leave the hand somewhat open and as you reach up make a grasping motion against the body; move the hands straight out from the shoulder

nearly the length of the arms; move the upper part of the body forward the least bit.

Cowardly, Afraid, Timid.—Hold up the "5" hands, with palms out, as if to ward off some danger; bring the hands back toward the body with a downward motion and draw the body back as if shrinking from imaginary danger.

Lazy.—Throw the right "L" hand against the left shoulder.

Idle.—Place the thumbs of the "L" hands at the arm pit, and wave the fingers.

Wide.—Place the open hands near together, palms toward each other, and then draw the hands apart.

Narrow.—Place the open hands as above, but farther apart, and then draw toward each other.

Width.—Make sign first as in "wide" and then as in "narrow," indicating the idea of size.

Deep.—With the "G" finger pointing down push the hand downward. The sign is sometimes made by pushing the finger down between the middle and third finger of the left hand held out, back up.

Shallow.—Hold out the left open hand, palm up, and above it hold the right open hand, palm down; push the hands toward each other, draw them back, and repeat the motion several times. Or, sign "deep, little."

High.—Pointing upward the forefinger of "G" hand, raise the hand to some height. Or, using the bent hand, pointing the fingers out, raise the hand, and as the length of the arm is reached extend the hand.

Far.—Pointing the "G" finger outward, move the hand slowly out the full length of the arm. Or,

(2) Place the "A" hands in juxtaposition so the middle joints touch and the thumbs point toward each other, the left hand resting close to the breast and the other a little in front; draw the right hand away slowly outward the full length of the arm.

Mixed.—Place the bent "5" hands one above the other so the fingers point toward each other; with a circular stirring motion move the right hand around from right to left and the left from left to right; continue the motion until the hands have described two or three circles.

Orderly, Ready.—Extend the open hands, pointing outward, and parallel to each other, over toward the left side; lift them both together from the wrists, move toward the right a little, and let them come down again; repeat the motion until the hands have been moved over to the right side.

True, Indeed.—Place the tip edge of the forefinger of "G" hand, pointed upward, against the lips and move straight forward some distance.

False (a lie).—Move the forefinger of the right "G" hand, held lengthwise, across the mouth from right to left with finger pointing toward the left. Or,

(2) Move the tip of the finger held perpendicularly across the same way. This indicates a less heinous falsehood, a "fib," or softens the accusation, and is used in preference to "lie" when speaking of imitations or false material.

Awful.—Hold the "O" hands one against either temple; throw both hands simultaneously forward from the head, not quite arm's length, opening the fingers the while, so they assume position of "5" at the end of the sign. The sign may be made with one hand only.

Fearful.—Place the "F" hands, one against either cheek, near the jaw; move them slowly to the temples and finish as above in "awful."

Dangerous.—Make sign for "fearful" and follow with "happen," *i. e.*, bring hands to position of "G" and quickly drop and twist them inward until they come to rest, backs up, parallel and pointing outward.

Careful (exercising watchfulness).—Place the "V" hands

one resting across the other, the left pointing outward and the right pointing toward the left; raise and lower both hands together slowly.

Careless, Heedless.—Hold the "V" hand in front of the forehead, pointing up; move back and forth from right to left and left to right several times.

Different.—Cross the ends of the "G" hands pointing outward; draw the fingers and hands apart toward the sides.

Various (different, in sense of many kinds).—Use the same motion but while drawing the hands apart give the forefingers a vibrating, up-and-down motion.

Curious.—Move the "C" hand with opening toward the left, in front of the face, describing a circle from right to left.

Funny, Humorous.—Rub the ends of the fingers of the "N" hand downward along the end of the nose, holding the palm side down.

Busy.—Make the sign for work, *i. e.*, strike the top of the left wrist with the under side of the right wrist, holding the hands in position of "S," and add sign of "action."

Action, Active.—Place the bent hands with fingers pointing down, in front out from the sides; draw them apart toward the sides and again bring them near; repeat the motion rather rapidly.

Perfect.—Hold the left "P" hand pointing up; strike tip of the middle finger with the tip of the middle finger of right "P" hand. It is like throwing the "P's" together.

Correct, Exact.—Holding the left "G" hand pointing out, the "G" up, strike it on the top with the right "G" hand held in a similar position.

Alone.—Move the "G" hand, with the back outward, and the finger pointing upward, straight out from the front and while doing so give it a zigzag motion from side to side.

Lonesome, Lonely.—Draw the forefinger of the "G" hand, held perpendicular, its length downward, across the mouth; then follow with the sign for "alone" as above.

Fast, Quick, Rapid.—Make the motion as in shooting a marble except that you hold the end of the thumb directly on the end of the forefinger. Or,

(2) Extend the left open hand pointing edgewise outward; with a quick motion bring the right hand up alongside and, pushing it straight out, strike the hands palm to palm, pushing the right hand on out beyond the end of the left and drawing the left well back.

Slow.—Draw the right hand slowly down the back of the left, held out and turned slightly upward.

Noble.—Strike the heart with the right "N" hand, palm against the body. It is usual to give something of a flourish to the hand as it is brought up to the position against the heart.

Low, Base.—Let the "A" hand drop in stages, holding it out in front from the side.

High, Prominent.—Holding the "A" hand out in front from the side, slowly lift it to a height above the head.

Polite, Courteous.—Strike the breast with the thumb of the "5" hand, all the fingers pointing upward; repeat the motion several times.

Fine.—With the "5" hand held somewhat farther out, bring back and strike the breast once as above, but more forcibly; or, as in "nice," pass palm of right hand over left palm outward.

Magnificent.—Place the "5" hands pointing outward with thumbs against the body just above the waist line and one hand on either side; draw the hands up almost to the level of the shoulders and then let them fall away; while the hands are moving upward give the fingers a vibrating motion. The sign may be made with one hand only.

Right.—Hold out the open left hand, palm up; diagonally across the palm push the right open hand with edge touching the palm. The sign may be made straight across.

Wrong.—Push the hand across as above but in a zigzag way instead of in a straight line.

Just, Fair.—From a position toward each side, bring the extended "O" hands together so the thumbs and fingers touch.

"Good Enough," "Goody."—Holding the closed "O" hands perpendicular, strike the "O's" together several times with some vindictiveness.

Unjust, Unfair.—Hold the hands in position as in above when the hands are brought together; raise the right hand and bring it down forcibly so that the "O" of the right hand strikes against the "O" of the left.

Fair (in the sense of good to a moderate degree).—First make the sign for good, then bring the open hands out toward the side from a position in front, as follows: let the hands come up edgewise and gradually turn them with palms up and give a slight shrug of the shoulder. Or, make sign for "medium," as explained below.

Worth.—Holding the extended "O" hands out in front, somewhat down, bring them up together in front as in "just", but note that they are brought from a lower position and gradually approach each other and not from the sides straight together as in "just."

Worthless.—Sign for "worth," then follow with turning the hands apart, and dropping them. Or,

(2) Strike the closed "O" hands together several times, bringing the thumbs and forefingers as closed together, then draw the hands apart. Or, in the last part of the sign open the hands quickly, draw the right hand above the left, and strike the palm of the left with the back of the right and let the hands then fall apart.

Valuable.—Sometimes expressed by the sign for "worth,"

but it is more correct to add sign for "money" and "much," made as follows: *Money*—Strike the palm of the open left hand with the back of the right "&" hand several times. For *Much*—Draw the right hand away, turning it until the palms are toward each other, and continue to draw the hands away from each other.

Nice, Clean, Pure.—Place the right open hand upon the open left, crosswise and palm to palm, and letting the right hand rest near the ball of the thumb; pass the right hand along the length of the left. When made in connection with "ghost" or sacred subjects this sign means "*Holy.*"

Dirty, Nasty.—Place the back of the "4" hand under the chin and wiggle or wave the fingers.

Pretty, Beautiful.—Place the right "5" hand before the face; while the hand describes a small circle, close the fingers and thumb till the hand has assumed the "&" position, when finishing the circle. The fingers move in a larger circle than the wrist, which is kept nearly stationary.

Ugly, Homely.—Crook the forefingers of the "G" hands and bring them up in front of the face so that the fingers are directly at the end of the nose and the fingers barely crossed (but not locked); draw the hands apart toward the sides. Or,

(2) Place the "A" hands, or the closed "O" hands, one at either cheek, but not touching them, as in pinching or grasping something between the forefinger and thumb; push one hand up and the other down, repeating the motion several times, the hands going up and down alternately as if distorting the face.

Medium, Midway.—Hold the left open hand out in front with the palm toward self; place the right "B" hand pointing out so the lower edge of the right is directly across the top edge of the left, between the thumb and fingers.

Expensive, Dear.—Lay the back of the right "&" hand in palm of left, for "money;" draw it away to the right and then drop it with a kind of jerk.

Cheap.—Begin sign same as above; lift the right hand away and while doing so turn it so its palm faces down toward that of the left, and then push the right hand toward the left as in "small," thus indicating a small amount of money.

Wet.—Sign for "water," *i. e.*, place forefinger of "W" hand against the lips; then bring both hands in front, and with both in position of slightly bent "5" hands close the fingers to a point with the thumb, as in the "&" hand, and repeat the opening and closing of the hand alternately several times.

Dry.—Draw the crooked forefinger of the right "G" hand from left to right across the mouth.

Color.—Placing the end of the right "B" hand in the centre of the left palm, give it a twisting motion as near as possible like an artist mixing colors on his palette.

Red.—Draw the end of the forefinger of the right "G" hand downward across the lower lip, two or three times.

Pink.—Draw the "P" hand downward across the mouth or just the lower lip.

Blue.—Holding the "B" hand up in front give it a trembling or shaking motion while drawing it toward the right side.

Green.—Similar motion with the right "G" hand.

Yellow.—Similar motion with the right "Y" hand.

Purple.—Similar motion with the right "P" hand.

Brown.—Holding the right "B" hand in front, move it to the right side while working the fingers. Or,

(2) Give the shaking motion with the "R" hand, at same time keeping fingers open.

White.—Place the palm of the open right hand against the breast; draw it away (to the front), bringing the fingers into the position of "&."

Black.—Draw the forefinger of the right "G" hand across the right eyebrow from left to right.

Gray.—With the "5" hands held in front, palms to self, throw them in and out in opposite directions so the fingers of one hand strike the fingers of the other as the hands pass, as it were, through each other. Or make "black" and "white," then "mix."

Several, Few.—Gradually extend the fingers of the right "A" hand, one at a time, beginning with the forefinger.

Wild.—Push the "5" hands up (one on either side of the head), above the head at the sides, giving them a violent shaking motion, twisting them at the elbows.

Tame (same as *Pet*).—Rub the back of the left "B" hand with the palm of the right several times, similar to the stroking of a cat.

NOTE: The verbs are signed the same way, and the noun "pet" same as above.

Willful.—Strike the breast upward with the thumb of the right "A" hand several times; or rub upward with the same hand against the breast, giving the body a slight forward movement as if pressing against the restraint of the right hand.

Important.—Place the right "I" hand upon the back of the left "A" hand and elevate the latter, carrying the right hand with it. Or,

(2) Hold the left "A" hand out at the front from the side, thumb extended, and pointing toward the left almost over the shoulder; place the right "A" hand in same position, somewhat lower and diagonally under the left about the centre of the waist; elevate both at the same time toward the left.

Strange.—Sign "know" and "new" together.

Heavy.—Holding the open hands in front, palms up, lift them with an apparent effort as if they held a load.

Light.—Same motion, but quick and easy as if the load were light.

Pleasant.—Holding the open hands just above the shoulders, palms toward back, wave them backward over the shoulders.

NOTE: This sign is used also to indicate "taking a walk" though it should be followed by the sign for "walk."

Drunk.—Toss the end of the thumb of the "Y" hand against the mouth as if carrying a bottle to the mouth to drink; then move the right arm, pointing upward from the elbow, forward in a staggering way.

Excessive, Exceed, Above the Ordinary.—Placing the left bent hand in front, palm down, rest the right bent hand upon the backs of the fingers, and then carry it up more or less according as the excess is great or small.

Empty, Gone, Out of, denoting *Absence.*—Place the right "5" hand in the left "C" hand, the "C" over the back of the right which is pointed up; drop the right hand down out of the left and let the latter close over it to "O."

Stylish, Fashionable.—Place the "&" hands side by side, pointing outward and touching; carry first the right forward toward side, assuming "5" position, and then draw it back; do the same with the left hand and repeat the motion several times.

Responsible.—Place both hands, one above the other, on the right shoulder, indicating that something rests thereon.

J. SCHUYLER LONG,
Head Teacher in the Iowa School,
Council Bluffs, Iowa.

[TO BE CONTINUED.]

PROPOSED COURSE AT GALLAUDET COLLEGE FOR THE DEGREE OF BACHELOR OF ARTS.

IN accordance with the announcement of President Gallaudet on Presentation Day, 1907, that the standard of the College would be raised in 1909, the Faculty has

agreed upon the following provisional course of studies leading to the degree of Bachelor of Arts:

	First Term.	*Second Term.*	*Third Term.*
Preparatory Year.	Plane Geometry.	Plane Geometry.	Plane Geometry.
	Cæsar.	Cæsar.	Cicero.
	English Comp. (3 hrs.). Ancient Hist. (2 hrs.).	English Comp. (3). Ancient Hist. (2).	English Comp. (3). Ancient Hist. (2).

Also 2 consecutive hours in Drawing required of all students of the Preparatory Class.

Freshman Year.	Advanced Algebra.	Plane Trigonometry.	Mechanics.
	Spherical Geometry *or Cicero.*	Descriptive Geom. *or Virgil.*	Descriptive Geom. *or American Liter.*
	English Comp. (2 hrs.). Mediæval Hist. (3hrs.).	English Comp. (2). Mediæval Hist. (3).	English Comp. (2). Modern Hist. (3).

Also 2 hours in Business Methods required of all Freshmen.

Sophomore Year.	Physics.	Physics.	Botany.
	Chemistry.	Chemistry.	Qualitative Analysis *or Spher. Trig. and Surveying.*
	English Comp. (1 hr.). English Liter. (3 hrs.). Public Speaking (1 hr.).	English Comp. (1). English Liter. (3). Public Speaking (1).	English Comp. (1). Rhetoric (3). Public Speaking (1).
Junior Year.	French.	French.	French.
	Zoology.	Physiology.	Political History of the U. S.
	Philology *or Electricity.*	English Literature. *or Electricity.*	Ethics and Political Economy.
Senior Year.	German.	German.	German and Æsthetics.
	Elements of Law *or French.*	Astronomy *or French.*	Mineralogy and Geology.
	Logic.	Butler's Analogy and Internat. Law.	Psychology.

In this schedule it is understood that Freshmen choosing Cicero in the first term must take Virgil in the second term and American Literature in the third; Juniors expecting to take Electricity in the second term must have pursued that study in the first term; but the French of the Senior year will be so arranged that any member of the class may take up the second term work.

Days of recitation are to remain as heretofore, no recitations being held on Saturdays. The length of the recitation period, one hour, is also to be unchanged. Thus, unless otherwise stated, each subject is to be taught five hours per week.

Optional Studies.

The following courses will be given as sufficient demand for them arises. They may be counted for degrees instead of regular courses, by consent of the Faculty:

1. *Greek.*
2. *Mathematics:* Analytic Geometry; Calculus; Strength of Materials.
3. *Domestic Economics.*
4. *Horticulture.*
5. *Surveying;* Leveling; Plane Surveying.
6. *Electricity:* Generators; Motors; Electrotyping.
7. *Chemistry:* Soils and Fertilizers; Advanced Qualitative Analysis; Quantitative Analysis; Chemical Preparations; Organic Chemistry; Determinative Mineralogy; Assaying.

The new course is to be adopted gradually, members of the present (1908–09) Freshman, Sophomore, and Junior classes following the old course. Members of the present Introductory class and those admitted in 1909 to the Preparatory class will follow the new course. In June, 1913, those members of the present Introductory class who are then in good standing will be awarded degrees

if they desire them, but will be allowed and advised to stay another year and complete the new course.

It is to be understood that this course as now presented is tentative and may be somewhat changed if it is later found not desirable to carry it out exactly as presented here.

SCHOOL ITEMS.

Central New York Institution.—Mr. Edward Perkins Clarke, Principal for the last three years, has resigned the office. He will be succeeded by Mr. Elbert A. Gruver, who formerly taught in the Pennsylvania Institution and for the past eleven years has been Principal and Superintendent of the Institution for Improved Instruction in New York.

Idaho School.—Mr. James Watson, who has been Superintendent of this School since its establishment, will retire at the close of the present session. Mr. Watson has served in the profession for forty-five years; first as a teacher in the Ontario Institution, then as Superintendent of the Washington State School, and finally in the Idaho School. He will be succeeded by Mr. Paul Martin, M. A., who received his special training at Gallaudet College, and has taught in the Texas, Pennsylvania, Washington State, and Idaho Schools.

Indiana School.—Two years ago the General Assembly changed the name of the School from "Institution for the Education of the Deaf and Dumb" to "State School for the Deaf," at the same time providing that this School and the School for the Blind "should not be regarded or classed as benevolent or charitable institutions, but as educational institutions of the State conducted wholly as such." This year the State has gone a step further in the right direction by amending the general compulsory education law so as to

make it applicable to all the deaf and the blind between the ages of eight and sixteen. The new paragraph inserted in the law is as follows:

"*Provided further*, That this act shall apply to any blind or deaf child or children between the ages of eight (8) and sixteen (16) years who are either totally blind or deaf or whose vision or hearing is so defective that they are unable to secure an education by sight or hearing; and *Provided further*, That in case of a child who is blind or deaf, or whose vision or hearing is so defective that he or she is unable to secure an education by sight or hearing, such child shall be required to attend the Indiana School for the Blind or the Indiana State School for the Deaf. *Provided further*, That applications for admission of all such children shall be made out in the usual form and passed upon by the board of trustees of the said schools respectively, and that no child shall be permitted to enter said schools until the application has been accepted by said board of trustees, and in case any child shall have been rejected by said board of trustees no penalty under the act shall rest against the parent or guardian or other person for the non-attendance of such child."

Michigan School.—Mr. Thomas L. Brown, a teacher in this School for the past fifty years, died February 14, 1909, aged seventy. He was a native of West Henniker, New Hampshire. Like both his parents and several other relatives he was congenitally deaf. He was educated at the American School at Hartford and taught continuously in the Michigan School from 1859 until his death. By his marked ability, his high character, and his devotion to the work through an unusually long term of service, he exerted an influence for good rarely equalled among teachers of the deaf.

Minnesota School.—Miss Mabel Morris, a teacher in this School for two years, has resigned her position to teach in the New York Day-School. She is succeeded by Miss Mabel Marshall, who has had experience in public schools and received special training in the Michigan School.

Nebraska School.—The State legislature has changed the name of the School from "Institute" to "School." The wording of the bill making the change is as follows:

"That in order to be better known and more fully recognized as strictly an educational institution, the name of the State School now known as the Nebraska Institute for the Deaf and Dumb be changed to Nebraska School for the Deaf."

New York Institution.—Miss Lila W. Wood, recently of the Illinois School, has been appointed as an additional teacher in the Kindergarten.

In the competition conducted by the New York *Times* for the best essays on the career of Abraham Lincoln, in which 10,000 school children competed, this School submitted thirty-one compositions by pupils. Of these twenty-one received favorable notice, as follows: Three medals with cash prizes to deaf-blind pupils; nine deaf pupils obtained medals, and nine others received certificates. Of the compositions contributed by the winners, seven were by congenitally deaf, two by semi-deaf, and twelve by semi-mute pupils. Of the congenitally deaf two are children of deaf parents, and have other deaf ancestors as well as relatives.

A beautiful illustrated pamphlet of eighty pages, giving the essays of the pupils and also a detailed account of the exercises at the Institution on Lincoln's birthday, has been printed at the Institution press.

Oklahoma School.—By act of the State legislature it is decided that this School will remain permanently at Sulphur.

Oregon School.—The State legislature has decided that the School shall be removed to a new location more favorable than the present one and nearer to Salem. It has appropriated seventy-five thousand dollars for the construction of buildings.

Texas School.—Mrs. Bernice (Taylor) Williams, formerly a teacher in this School, died April 1, 1909, aged twenty-nine. She was the daughter of Rev. C. A. Taylor, formerly a member of the Board of Trustees, and before her marriage taught in the Oral Department for four years. She was married three years ago to Mr. J. H. W. Williams, Superintendent, and left a son ten days old. "In her death the School loses a staunch friend, the community a Christian

woman whose labors and example made for its betterment, and her associates a companion who by her gentle and cheerful disposition threw sunshine across their pathway and made life's burdens appear less heavy."

MISCELLANEOUS.

The Thirteenth Census.—There was a strong disposition this year on the part of the Director of the Census and the congressional committees in charge of the Census bill to omit the usual enumeration of the deaf and the blind in the Thirteenth Census of the United States, which is to be taken in 1910, on the ground (1) that the returns of these classes by the enumerators in the last Census were so erroneous and unsatisfactory that their value bore no fair proportion to the expense involved; (2) that a strenuous demand was made from some quarters that other special classes, such as ruptured, crippled, and deformed children, and persons having speech defects, such as stuttering and stammering, should also be included; and it was feared that if the deaf and the blind were enumerated, these other classes, as well as the insane and the feeble-minded, would have to be enumerated also, which would increase the cost of taking the Census by half a million dollars; (3) that as the education of the deaf and the blind is a matter belonging to the several States, the information desired concerning these classes ought to be obtained by the States themselves by means of an intermediate census, as is now done in several of the States, for instance, New York, Massachusetts, and Pennsylvania, and that the duty of collecting such statistics does not properly belong to the United States.

In consequence of this disposition the Census Act passed by the last Congress (which, however, was vetoed by President Roosevelt) contained no provision for the enumeration of the deaf and the blind except for those in institutions. This fact was not discovered by the Committee on the Census

appointed by the Convention of American Instructors of the Deaf, nor by the similar Committee of the Association to Promote the Teaching of Speech to the Deaf, until the bill had passed both houses of Congress and was in Conference Committee. It was too late then to have any change made in the bill; but members of the two Committees, who acted together in the matter, were able, through interviews with the Director of the Census and a hearing before the Census Committee of the House of Representatives, to overcome the objections above mentioned and to secure from the House Committee a favorable report upon the following Joint Resolution, which was introduced at their request in the House of Representatives:

"*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That the Director of the Census is authorized and directed to obtain the names and addresses of the blind and the deaf at the Thirteenth Census, notwithstanding the restrictions and limitations contained in section eight of the Act entitled 'An Act for the taking of the Thirteenth and subsequent censuses.' "

The provision of the above Joint Resolution is nearly the same that was made in the Act for the taking of the Twelfth Census ten years ago, under which Dr. Bell, as Special Agent, was able to obtain such full information of various kinds concerning the deaf.*

In consequence of the veto of the Census Act of the last Congress the whole matter was relegated to the present Congress. The Act, which has recently passed both Houses and is now in Conference Committee, embodies the provision of the above Joint Resolution. It is understood that under this provision there will be no special schedule for the enumeration of the deaf and the blind, as in the last three censuses, and that the enumerators will not receive additional compensation for recording persons belonging to these classes. There will, however, be a special column in the population schedule in which the fact of deafness

*See the *Annals*, li, 288–296, 487–499; lii, 13–30, 158–167, 245–254; liii, 159–172, 270–271.

or blindness is to be noted. The name, address, relationship to head of family, color, sex, age, conjugal condition, place of birth, place of birth of parents, number of years in the United States, citizenship, occupation, whether or not employer or employee, school attendance, literacy, tenure of home, and whether or not a survivor of the Union or Confederate Army or Navy can be ascertained from the population schedule. After the returns have been made by the enumerators their accuracy with respect to the deaf and the blind may be verified and such further particulars as are deemed desirable by the Director of the Census may be obtained by correspondence through the Census Bureau.

———

An Interpreter in Court.—The Cedar Falls, Iowa, *Daily Record* of April 8, 1909, says that Rev. J. J. Middleton of that city has been endeavoring to have a law passed by the Iowa legislature providing that when deaf-mutes are arraigned in court an interpreter shall be supplied. A bill to that effect was introduced and the Speaker of the House referred the question to the Attorney-General. His deputy in reply expresses the opinion that the case is fully covered by the present law, which provides for an interpreter for persons unable to speak or understand the English language. He also says that deaf-mutes have a right to demand the transcribing of all the evidence against them and if they are not able to meet the expense it must be paid by the county where the trial is held.

———

A Danish Manual of Signs.—Mr. Johs. Jörgensen, President of the Deaf-Mute Association of Copenhagen, has published a pamphlet containing the manual alphabet and a description of 280 of the signs most generally used by the deaf of Denmark (De dövstummes Haandalfabet og 280 af de almindeligste Tegn. Köbenhavn: Alfred Jacobsen. 1907. 8vo, pp. 32). Most of the letters of the manual alphabet are the same as those of the alphabet used in America, but there are some differences. The signs, which are not only described in the text but are also represented by photographs,

also correspond in some cases to those employed in this country and in others are entirely different. The descriptions in the text are briefer and less clear than those given by Mr. Long in the series of articles now appearing in the *Annals*, but this is compensated for by the accompanying photographs. These show the position of the hands at the beginning of each sign and indicate by lines the course they follow to complete it.

A Treatise on the Sign Language.—Mr. E. Reuschert, a teacher in the Royal Institution, Berlin, Germany, the author of a Life of Moritz Hill and other important works that have been reviewed in the *Annals*, has in press a treatise on the sign language, its nature, the history of its development, and its value in the instruction of the deaf.

Camp Chocorua.—Mr. Davidson has purchased a new site for his vacation camp for boys in the White Mountains, and is erecting suitable buildings. It comprises over a hundred acres and is near the leased premises in which the camp has been successfully carried on for the past seven years.

The International Bulletin.—The conductors of the *Bulletin International* mentioned in the January *Annals* (page 114) announce that the "important book relating to our special literature chosen from the works of authors no longer living" that has been selected for analysis and review this year is Walther's "*Handbuch der Taubstummenbildung.*" We again call attention to the invitation of the *Bulletin* to teachers of the deaf to contribute the result of their studies upon one or more of the several questions relating to speech-reading mentioned in the January *Annals* and to subscribe one dollar for the publication. The conductors would be glad to have all communications presented in French; if that is not possible they request that for other languages the typewriter may be used or the manuscript be written very distinctly. Address Mr. B. Thollon, Institution Nationale des Sourds-Muets, 254 rue St.-Jacques, Paris, France.

The Summer Meeting of the Association to Promote the Teaching of Speech.—The Meeting this summer, announced in the last number of the *Annals* for June 26–July 2, has been postponed to June 28–July 5 for the greater convenience of some of the schools. Information concerning local arrangements may be obtained from the Chairman of the Committee, Miss Mary McCowen, 512 North Normal Park Way, Englewood, Chicago, Illinois; information concerning the programme of exercises from the President of the Association, Dr. A. L. E. Crouter, Mt. Airy, Philadelphia, or from Miss McCowen.

New Periodicals.—The following publications have been added to the long list of periodicals conducted in the interest of the deaf:

The New Mexico Progress, New Mexico School for the Deaf, Santa Fe, New Mexico; W. O. Connor, Jr., Editor; monthly during the school term; 50 cents a year.

Our Young People. The Deaf-Mutes' Friend, St. John's Institute, St. Francis, Wisconsin.

The Northwest Silent Observer, 2 Kinnear Building, 1426 Fourth Avenue, Seattle, Washington; Adolph N. Struck, Editor; fortnightly; $1.00 a year.

L'Ami des Sourds-Muets, 1529 rue St.-Dominique, Montreal, Quebec; Stanislas Giroux, Editor; monthly; 50 cents a year.

Effeta, 151 via dei Gracchi, Rome, Italy; P. Raffaele Grassi, Editor; monthly; 60 cents a year.

Publications Received.—We have received the following Reports of Schools published in 1908 in addition to those previously mentioned: Clarke (Forty-first Annual); New York (Ninetieth Annual); North Dakota (Ninth Biennial); South Australian (Thirty-second Annual); published in 1909, Halifax (Fifty-first Annual); Lyons, France (Twenty-fifth Annual); Perkins (Seventy-seventh Annual). Also the following other publications: Seventeenth Annual Report of the Mission and Angas Home; "*Nuove Letture*" (Siena. 1909. 12 mo, pp. 76) and "*Storia Sacra*" (Siena. 1909. 12 mo, pp. 63) by Guido Meucci, Instructor in the Royal Pendola Institution at Siena, Italy.

ADVERTISEMENTS.

BUREAU OF INFORMATION,

CONVENTION OF AMERICAN INSTRUCTORS OF THE DEAF.

The Secretary has on file applications from about thirty candidates for positions as matrons, private tutors for the summer, teachers of sloyd, teachers of art, manual teachers and oral teachers. A large proportion of these applications are from teachers of experience.

Inquiries as to these candidates are desired from Superintendents wishing to fill positions for next year.

Teachers, supervisors, and matrons wishing positions are invited to file their applications with the Secretary.

PERCIVAL HALL,
Secretary, Gallaudet College,
Washington, D. C.

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